HOLOGY DEPARTMENT

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JUNE 1949
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DETROIT

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BRADLEY

In This Issue:

Cars Must Be Kept Safe



There's no guesswork with the new Hastings Aero-type Spark Plugs—in manufacture or installation. You know exactly what each plug will do before you put it in service.

You know by the exclusive Performance Rating System. Hastings Plugs are rated by the same tests given aircraft plugs. This predetermines the amount of work each plug will do, under hot or cold operating conditions.

Moreover, each and every Hastings Plug

is X-ray inspected before it comes to you. Fluoroscopic examination makes sure the electrodes are properly seated and sealed; that construction and heat flow are uniform.

Add these features—the H. T. Aluminum Oxide Insulator, Hastings' adherence to aircraft standards, the wider gap setting—and you'll realize here is a spark plug you always can trust.

SPARK PLUG DIVISION, HASTINGS MANUFACTURING CO., HASTINGS, MICH.



\$125 and worth it!

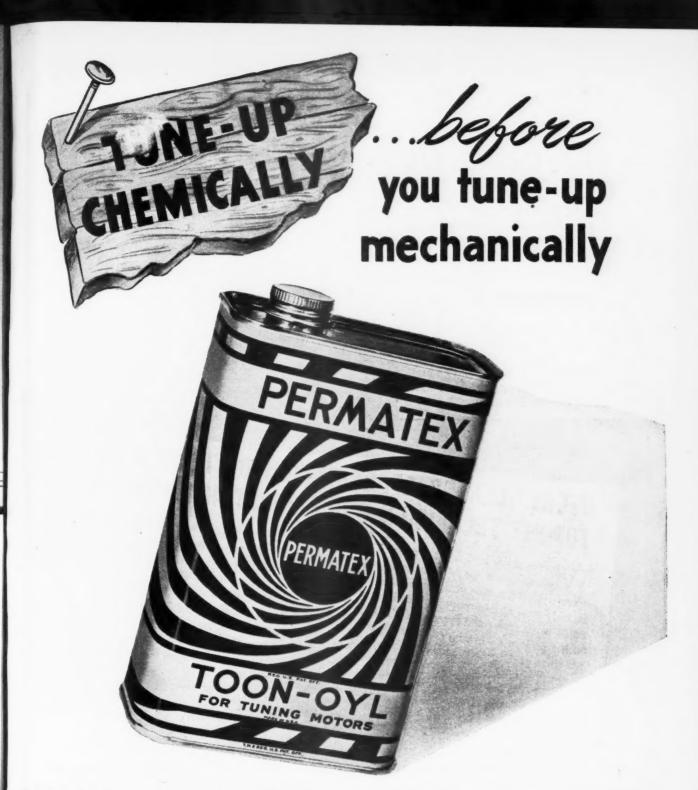
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If Hastings Spark Plugs are not yet available in your territory, write direct for illustrated catalog. Distribution is being developed as rapidly as possible—your jobber will be able to supply you soon.



Before you tune-up an engine, make sure it is "chemically clean". Just add Permatex Toon-Oyl to crankcase oil, warm up engine and let it idle. Sludge and carbon-gum binders that interfere with the smooth operation of valves, piston rings, oil lines and oil screens, will be loosened, disbursed and dissolved!

Then, you'll have a "Chemically Clean" engine, ready for your accurate mechanical adjustments!

PERMATEX COMPANY, INC., BROOKLYN 29, N. Y.

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OVERWHELMING APPRECIATION OF TEXACO'S TOP-HIT TELEVISION SHOW BOOSTING SALES!

THAT a show and what a man! You can say that for Milton Berle who emcees the show. And you can say it again for Sid Stone with his popular "pitch man" act, always performed in front of a Texaco Station. Here's a selling commercial that fits right into a great vaudeville show. It's easy to take, hard to forget. And so, product and Texaco Dealer identification is high. This is the sales clincher to the tremendous appreciation of a constantly growing audience for America's most popular television show!

Starting off with seven East coast cities one year ago, it is now telecast from 24

cities, coast-to-coast. Texaco Dealers are getting a brand new, powerful sales push, yet it is just one part of a big, over-all program including the Texaco Star Theater Milton Berle radio show every Wednesday night . . . national magazine advertising . . . the Metropolitan Opera broadcasts during the New York season . . . window displays . . . direct mail ... and many other lo-

cal dealer aids. THE TEXAS COMPANY

No wonder TEXACO DEALERS are such busy dealers!

A Great Line-up for TEXACO DEALERS Sky Chief and FIRE-CHIEF GASOLINES

HAVOLINE and TEXACO MOTOR OILS · MARFAK CHASSIS LUBRICATION · P T ANTI-FREEZE · REGISTERED REST ROOMS

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> Reg. U. S. Pat. Off. AUTOMOTIVE SERVICEMEN

Vol. LXVIII, No. 7

June, 1949



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, 1949



Now, you have the ammunition to reach the service-duty truck... to bring it into your shop for profitable brake work and other service.

Now, you can offer truck operators in the service duty field, both independents and fleets, Raybestos PGT Brake Lining Sets, specifically engineered for their individual requirements. Now, you have the extra advantage of the Raybestos Brake Certificate Program . . . a pro-

gram that *sells* brake inspection as the only sure way to dependable brake performance.

Reach out for the service-duty truck. Reach out for *all* the service business that it can bring you. Call on Raybestos PGT Brake Lining Sets, designed and built to meet the tough, stop-and-

stop-again needs of the smaller trucks of all popular makes.



America's Biggest Selling BRAKE LINING

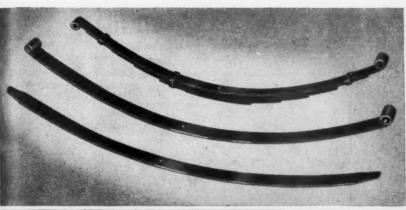


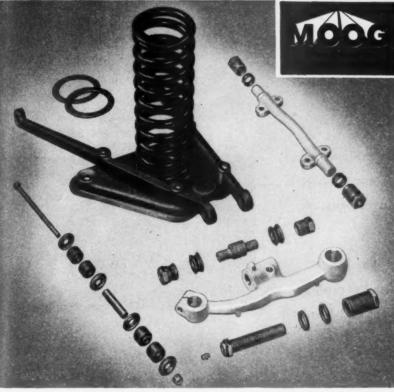
RAYBESTOS-MANHATTAN, INC., Manufacturers of Brake Linings • Brake Blocks • Clutch Facings • Fan Belts • Mechanical Rubber Products
Radiator Hose • Rubber Covered Equipment • Asbestos Textiles • Packings • Powdered Metal Products • Abrasive Diamond Wheels • Bowling Balls

A Great Line ..

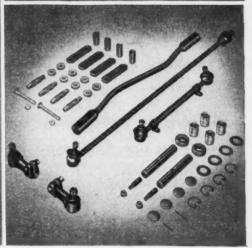
BACKED BY A GREAT NAME IN AUTOMOTIVE MAINTENANCE

Moog quality and know-how produces a line of replacement parts that insure longer, safer driving and eliminate costly comebacks.









- MOOG X-PLUS PISTON RINGS
 - for FULL POWER performance.
- MOOG DYNAMIZER
 - restores all types of collapsed pistons.
- MOOG SPRINGS AND HELPERS
 - Electrically Heat Treated, Tested.
- MOOG COIL ACTION PARTS
 - The leader in Spring Suspension Replacements.
- MOOG CHASSIS PARTS
 - King bolts tie rod ends shackles and spring parts.

MOOG INDUSTRIES, INC., St. Louis 14, Mo.

Divisions:

MOOG PISTON RING COMPANY MOOG COIL ACTION PARTS CO. ST. LOUIS SPRING COMPANY

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1949



When you display the AC Service Dealer Sign, on the products which you handle, you become a national advertiser by tying in with the AC advertising on those lines.

Each line of AC Profit Boosters builds two kinds of profits for you—sales profits and service profits. Every Profit Booster is a replacement item and brings your customers back for service from time to time.

Consequently, when you sell AC, you build a constantly growing business, steadily made better by AC engineering improvements and AC advertising.

Almost every car and truck on the road has one or more AC products. That means a whale of a market.



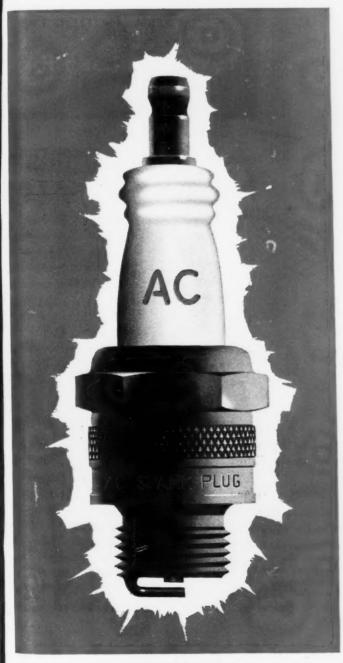
AC GASOLINE STRAINERS



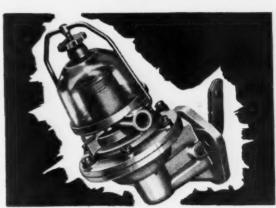
AC SPEEDOMETER CABLE-CASING ASSEMBLIES—
"TAILOR-MADE"

AC SPARK PLUG DIVISION . GENERAL MOTORS CORPORATION

Bline of Profit Boosters



AC SPARK PLUGS WITH PATENTED CORALOX INSULATORS



AC FUEL PUMPS-"HEART OF THE FUEL SYSTEM"



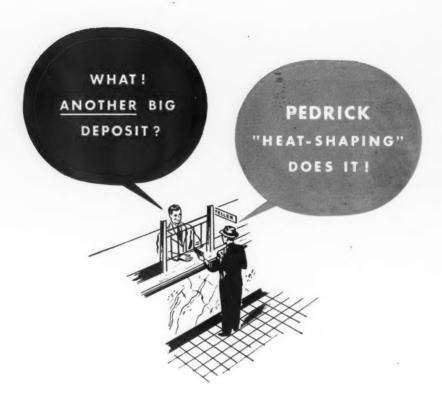
AC OIL FILTERS AND ELEMENTS—
"DIRT-PROOF" ENGINE OIL



AC FLEXIBLE LINES—"TAILOR-MADE" ASSORTMENTS
AND BULK MAKE-UP KITS

1949

dvertiser s sign



Yes, Pedrick "Heat-Shaped" piston rings are helping more and more shops show a healthy profit in engine repair business!

A patented Pedrick process, "Heat-Shaping" produces rings which make your overhaul jobs last longer, give better service. "Heat-Shaped" rings press *evenly* against the cylinder walls all the way around. No excess wear from unequal pressure! What's more,

"Heat-Shaped" rings hold their shape far longer. They won't warp or distort on the job.

To make bigger profits in engine

Franchise Dealer Plan

Includes not only piston rings and complete service information, but a full program of advertising and merchandising help to bring more engine jobs into your shop. Ask your Pedrick jobber. repair work . . . and to attract more engine overhauls . . . use Pedrick "Heat-Shaped" rings in Engineered Sets, backed by the most liberal guarantee in the piston ring industry. WILKENING MANUFACTURING Co., Philadelphia 42, Pa. In Canada: Wilkening Manufacturing Co. (Canada) Ltd.. Toronto. For 29 years, supplier of piston rings to leading vehicle and engine manufacturers.



PISTON RINGS ARE "HEAT-SHAPED"

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YOU can build your brake business...with ads like this

in POST • HOLIDAY
OUNTRY GENTLEMAN
... and with
he <u>right</u> selling story!

GREY-ROCK'S continuing national advertising campaign reaches your customers, makes them really brake-conscious.

It's easy to follow through . . . with the sales story that will step up your volume in brake jobs.

Tell every customer that his safety depends on brakes. Point out the danger of uncertain, unbalanced brakes. Offer to pull a wheel to prove your point. Then sell the benefits of top-quality brake service with Grey-Rock Balanced Linings. Your story is sure to click because you have this unique sales-clincher;

Only
Grey-Rock
has Balanced Braksets

GREY-ROCK DIVISION of Raybestos-Manhattan, Inc., Manheim, Pa.

Don't take chances with

Bad Brakes of Careful drivers get their brakes inspected regularly. Do you?



BALANCED BRAKSETS for passenger cars (riveted or bonded)
BALANCED TRUCKSETS for light and medium trucks
BOLT-ON BLOCKS for heavy-duty buses, trucks, and trailers
STANDARD WYRBAC SETS of Grey-Rock quality
VEE-LOK. Molded and Semi-Metallic CLUTCH FACINGS
FAN BELTS · RADIATOR HOSE



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"The longer I live the surer I am that the U.S.A. is a mighty friendly place. People just can't help helping a fellow who really helps himself. I was thirteen years old when I had to go to work. What would I do?

"The first helping hand I got came from my friend, the junk man. He said he had an old junker of a car that would still run. When I saw it I grabbed it,—promised to pay thirty dollars for it in thirty days. The junk man said I could take sixty.



noisy buggy. I'd take 'em any place in town for a quarter. As the years went on I prospered, replaced 'Lena' with a better car, and finally a brand new one that would carry seven people.

"Then came the biggest helping hand of all. The banker in our town said, 'Alex, here's something you ought to look into. Old Man Smith wants to quit his old livery stable garage and the deal takes three hundred dollars.'

"Well, folks, that's my story. I bought out old man Smith. This gave my taxi a home, and me a base of operations for the future.

"I'm still at the same location. The old livery stable building has been gone for fifteen years and so have the taxis. If you walk in today you'll find good looking De Soto and Plymouth cars all over the place,—new ones arrive and are promptly delivered to customers; others being tuned up in our big service shops.



"The next hand came from the neighbors. They watched me fixing up that old car in the back yard. Took me a week to clean and paint the thing,—two days to paint TAXI in big red letters on both sides and rear.

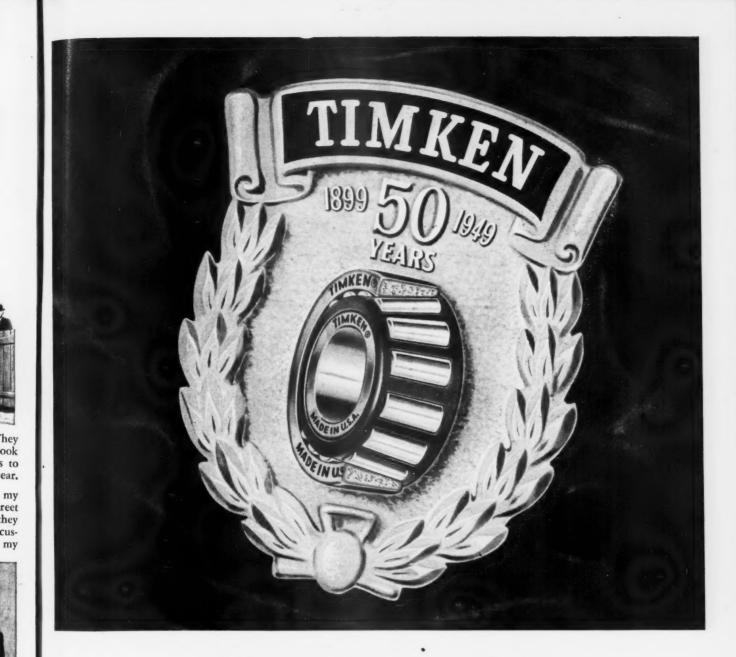
"By that time everybody was talking about my 'Leaping Lena.' When I first drove her down the street people stood and stared; then they'd smile. Soon they began to hail me. First thing I knew I had lots of customers. Folks seemed to get a kick out of riding in my



"No, I can't complain about how the world has treated me. As far as I can see a lot of other fellows have had the same good treatment. Sure, a guy has to do his part before the rest can follow. It's the sort of thing that happens when people are free to work and get ahead."

Write for our free booklet containing a number of these stories of accomplishments by enterprising men. Chrysler Corporation, 341 Massachusetts Ave., Highand Park 3, Mich.

Chrysler Corporation
PLYMOUTH • DODGE • DE SOTO • CHRYSLER • DODGE "JOB-RATED" TRUCKS



50th birthday of the company whose products you know by the trade-mark: TIMKEN

SINCE 1899 THE TIMKEN ROLLER BEARING COMPANY HAS BEEN HELPING AMERICAN BUSINESS GET THE MOST FOR ITS MONEY NOBODY likes to buy a "pig in a poke". In America you don't have to. You're protected by trade-marks like "TIMKEN".

Registered as a trade-mark in the United States Patent Office, "TIMKEN" identifies products made by The Timken Roller Bearing Company: Timken tapered roller bearings, Timken alloy steels and seamless tubing and Timken

removable rock bits.

Experience over the years has shown Timken products to be the finest in their respective fields. And many thousands of men and women are working hard to keep them that way. No wonder it has become a habit throughout industry to look for the trade-mark "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

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949

Sta-Jul...



The Original Equipment

Line

a sales pusher



MARTIN BEER, Owner Martin Beer's Service Center Detroit, Michigan



GLENN PRATT Buhl Sons Company Detroit, Michigan

"'Sta-ful is strictly tops with us! Last year our sales and profits hit an all-time record and we credit Sta-ful with the score. It's the kind of battery our customers go for, it offers more, gives better performance. And the advertising program behind Sta-ful works for the retailer—helps push sales across the board.' This statement of Detroit dealer Martin Beer is typical of the way our dealers praise the Auto-Lite Sta-ful Battery." Glenn Pratt, Buhl Sons Co., Detroit, Michigan.

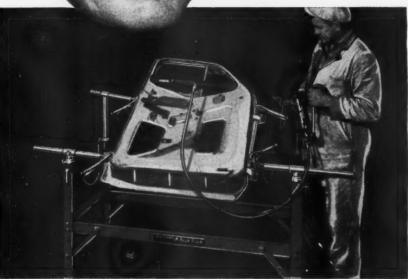
HERE'S WHAT Sta-ful DOES FOR YOU

- 1 Gives you a real sales leader . . . a battery that needs water only 3 times a year in normal car use.
- 2 Turns in a sweet profit on every sale.
- 3 Reduces time and bother required for checking and servicing of batteries.
- 4 Wins friends, boosts sales all along the line because the Sta-ful principle helps end a major cause of battery grief and failure.



"I'm adding another

Reck-Rack



RECK-RACK rigidly holds any size or shape of body section in the most convenient position and height for all roughing and finishing jobs. No jiggle! No special training! Make any set up in 90 seconds!

RECK-RACK Helps You do ALL THESE Jobs faster, Easier



STRAIGHTENING



HAMMERING



FILING



RECK-RACK Handles ANY Shape

	阿	T
DOORS	HOODS	TRUNK LIDS





because . . .

"IT CUTS TIME IN HALF on door and fender roughout and metal finishing . . .

"Our first one paid for itself in LESS THAN 90 DAYS . . .

"Our mechanics fight to use it. Another Reck-Rack will speed us up even more!"

That's what Peter Plawski, Midwest body shop expert, says about Reck-Rack. He adds, "Our Reck-Rack has paid for itself at least five times over!" Competitive bidding makes Reck-Rack necessary to assure proper body shop profits. Used car reconditioning demands it, too! Investment is small! Order from your jobber or accept the offer below today!

Do you want a Free Demonstration in your own shop? RETURN THE COUPON!

On your request, Blackhawk will make every effort to arrange a free trial or demonstration of Reck-Rack in your own shop. Leading jobbers in practically all areas are using shop demonstrations to rush the dramatic news of Reck-Rack profits to their customers. Only by seeing Reck-Rack in action can you fully realize what indispensable advantages it creates for you!

BLACKH HYDRAULIC JACKS . PORTO-POWER . WRENCHES

----BLACKHAWK MFG. CO., Dept. R-669, Milwaukee 1, Wis. Without obligation to me, please do the following: ☐ Arrange Reck-Rack demonstration, if possible, in our shop. ☐ Send free literature on Reck-Rack. NAME

THE SIGN OF A GOOD DEAL

BATTERIES



- **FOR QUICKER SALES**
- FOR EASIER SALES
- FOR GREATER ANNUAL PROFIT

WILLARD STORAGE BATTERY COMPANY

Cleveland

Los Angeles • Dallas • Memphis

Portland .

949

ACIDIESIS

GENUINE Altinized

EAK-ROOF RINGS

REG. U. S. PAT. OF

INCREASE NATURAL WEAR LIFE 331/3/





By actual TESTS!

EAK-TROOF FOR SATISFIED

BROVEIJ

FRICTION causes motor wear . . . but so does ACID ACTION! One major oil company publicly states that up to 90% of engine wear is caused by acid action. That's why LEAK-PROOF rings are made of Phosalloy and Electalloy to resist friction . . . and why they are ALTINIZED to resist acid!

McQuay-Norris engineers have duplicated acids formed in a motor, shown in the glass container. Note that the acid attacking the two ordinary rings at the right causes bubbles to rise. In motor operation that means wear. Now note no bubbles rise from the ring at the left because it is ALTINIZED!

In addition, altinizing reduces scuffing; absorbs more oil; resists friction; provides quick sealing and increases natural wear life 33½%.

WHAT IS Altinizing?

Altinizing is an exclusive process created by McQuay-Norris whereby a special tin coating is electrically deposited upon the surface of the rings. All LEAK-PROOF rings are ALTINIZED.

THAT'S WHY EAK-ROOF
PISTON RINGS ARE
Guaranteed to do all 4

Keep 3 Give smooth, new motor operation

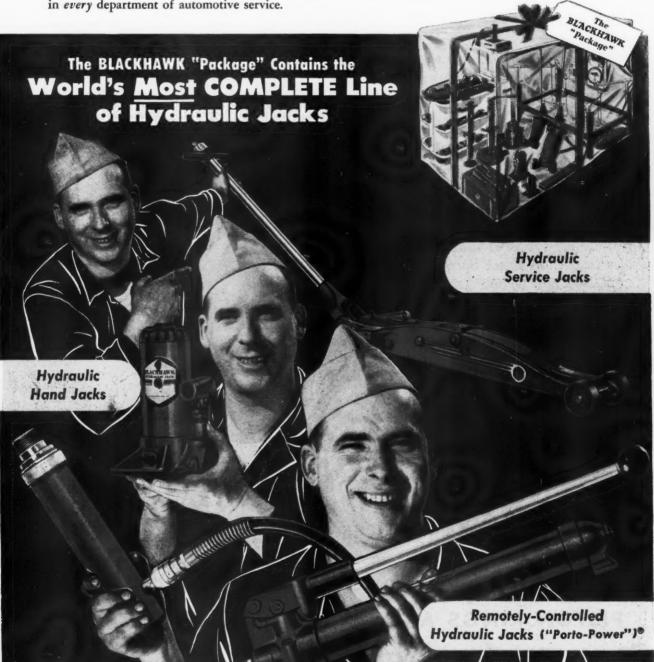
Keep 4 Give power up 4 longer life

McQuay-Norris Manufacturing Co., St. Louis 10, Mo.

CUSTOMERS and BIGGER PROFITS

BLACKHAWK....your PROFIT-PARTNER on every job!

*An impartial survey proves that 90% of all major service jobs — the profit jobs — require equipment such as made by Blackhawk! You can bank on Blackhawk equipment to serve in every department of automotive service.



Only BLACKHAWK Jacks

Give You This "Profit-Proved" Background

It's just good business to insist on Blackhawk Jacks ... because it's the only jack line developed from a complete service-proved background. Of all jack manufacturers, Blackhawk is the only one making

a full range of hydraulic service equipment, for varied applications. This unmatched experience produces better basic designs. Exclusive features are "profit-proved" for happy users in all fields and in all departments of automotive service.

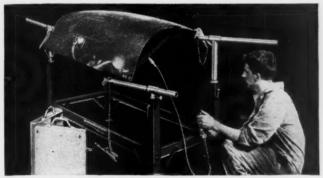
Here's how RECK-RACK...another New "Profit-Partner"...got into the Blackhawk "Package"

Before a product can qualify to be "made by Blackhawk" it must pass a practical "profit-making test" for its users, (1) Does it have basic, continuous purpose? (2) Does it have above average utility? (3) Can it quickly pay for itself and show the user a profit? RECK-RACK passed these "tests" with flying colors — because modern body sections are now too cumbersome for makeshift holding methods (when removed for roughing and finishing). But they become another profit job with RECK-RACK!

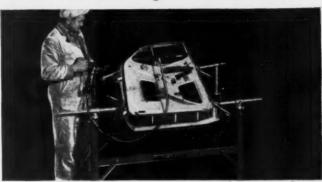


holding methods . . . but . . . another profit job with RECK-RACK"

Like Other Blackhawk Products... RECK-RACK was "BORN RIGHT"... and is therefore Necessary to PROFITS!



RECK-RACK rigidly holds any body section in the most convenient position for all roughing and finishing jobs, RECK-RACK qualified to become a Blackhawk Product because it proved to be basically necessary in profitable automotive service.



9 OUT OF 10 body and fender jobs require PORTO-POWER hydraulic equipment or RECK-RACK or both. Fast used-car appearance reconditioning and complete body service demand this versatile Blackhawk equipment.



RECK-RACK eliminates time waste. It kicks out difficult, dangerous methods. Out go clamps, horses, makeshift tables!



RECK-RACK serves in roughout, welding, dollying and dinging, air hammering, sanding, filing and painting.

GET SET TO MEET THE USED CAR PROBLEM! GET SET TO FIGHT FOR PROFITABLE BODY BUSINESS! Get a RECK-RACK on the floor and watch profits grow as work speeds up. Ask your Blackhawk jobber salesman to show you Blackhawk catalogs on RECK-RACK and other small-investment equipment. Every-

thing in the big Blackhawk "Package" can be a "Profit-Partner" for you. Because 9 out of 10 major service jobs require products such as made by Blackhawk, it's good business to make sure that you are armed with plenty of Blackhawk equipment. Bank on Blackhawk to give you the most for your money!

BLACKHAWK MFG. CO., Dept. M669, Milwaukee 1, Wis.

BLACKHAWK[®]

HAND JACKS · SERVICE JACKS · WRENCHES · PORTO-POWER · RECK-RACK

MOTOR AGE, June, 1949

DON'T LET YOUR CUSTOMERS GET CAUGHT WITH THEIR TIRES



Your customers depend on you for more than equipment and service. They depend on your judgment of the quality and work-

That's why, whenever you buy tire valve equipment it's best to say "Schrader." Schrader caps, cores, gauges, etc. have what it takes manship in the parts you use or sell. say Schrader. Schrader caps, cores, gauges, etc. have what it takes to keep your customers tires plump and your customers happy. Besides it's easier to buy Schrader because Schrader makes every-

Then there's "customer acceptance"—and the word for that is Schrader because Schrader advertising, appearing regularly year after year, tells your customers the story of Schrader quality . . . helps thing you need. make Schrader equipment easier to sell. So for ease of buying and ease of selling—it's Schrader all the way.

Most motorists know the reliability of Schrader gauges. They stand up longer.

SPARK-PLUG TIRE PUMPS

Every motorist, truck or tractor owner needs one. Demonstrate it-you'll sell it.

Order Schrader in the handy 100-packages (20 boxes of five) for VALVE CORES quick resale—and for your own use with each tube repair, buy them in the 100-bulk cartons.

BUY CAPS THE SAME WAY.

BUY SCHRADER SERVICE GAUGES FOR YOUR OWN USE, and be sure you're always right when you check a tire pressure.

DON'T SELL LESS THAN THE BEST-DON'T USE LESS THAN THE BEST-

Schrader PRODUCTS CONTROL THE AIR

Y SCHRADER!

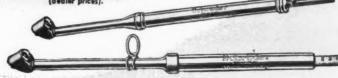
ONE SOURCE ... ONE RESPONSIBILITY

Valves • Cores • Caps • Gauges • Vulcanizers • Air Chucks • Valve Converters

Better valve replacements and tube repairs are sure with a Schrader No. 8601 \$17.00 (dealer price).



7188 BH for everyday use at \$3.35, 8106 B Master gauge to gauge the ac-curacy of all your tire



A. SCHRADER'S SON, Division of Scovill Manufacturing Company, Incorporated, BROOKLYN 17, NEW YORK

World's Largest Manufacturer of Tire Valves, Gauges and Accessories



Eye catching display of No. 5050 gauges gives that "buy it now" nudge to customers. Show 'em and sell 'em at \$1.60 per gauge.



Another fast seller. Put them up front and sell Spark Plug Tire Pumps for \$5.00



For repair work buy the bulk cartons of 100 caps or cores at re

tail fast for 35¢ when



MO



How to enjoy your **Customers' Vacations—**

SHOW'EM and SELL'EM GUIDE LAMP



NEW GUIDE MULTI-PURPOSE LAMP

Just what they need for their trips! A combination trouble lamp, portable spotlamp, campsite floodlamp and a replacement unit for any sealed beam headlamp! The 13-foot extension cord plugs into the instrument panel cigar lighter! Here, in one unit and at an acceptable price, is a multipurpose vacation aid that sells on sight. It's a multi-profit item, too!

Feature these two famous Guide Lamp combinations in your vacation-time displays . . . demonstrate them to all who drive in for a pre-vacation tune-up.





NEW GUIDE COMBINATION SPOTLAMP AND OUTSIDE MIRROR

A handsome spotlamp with sealed light unit and inside control, PLUS a crystal-clear outside mirror that is adjusted by the same inside control. Your customers will want this newest Guide development because it will make their vacation driving more enjoyable and will add to driving convenience all year round and for many years to come.



GUIDE LAMP—A UNITED MOTORS LINE Available Everywhere Through UNITED MOTORS DISTRIBUTORS tage

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TUBING SIZE MARKED ON NUT for quick size identification

On Compression and Flare Types

one of the many extras that build preference for

IMPERIAL TUBE FITTINGS

This marking makes it so much easier to find, identify, sort and check size of fittings. Prevents mixups—a lifesaver when you're in a hurry.

Here are two other important extras:

FORGED*

- * For Greater Strength
- ★ For Extra Toughness
- * For Closer Grain Structure
- ★ For Greater Uniformity

*Elbow and Tee Bodies

Extra Length Pipe Threads

Full length S.A.E. pipe threads on all pipe ends. They give extra assurance of tight joints and provide for additional take-ups when reconnection is necessary.

"Look For the Diamond 'I' On Every Fitting You Buy"

In addition to the outstanding advantage of FORGED Bodies, Extra Length Pipe Threads and Size Marking On Nuts, Imperial Tube Fittings feature accurately machined threads and seats, adequate wall thickness, flats for wrench hold and consistent rigid inspection throughout,

IMPERIAL TUBE WORKING TOOLS . . . their quality speeds your work



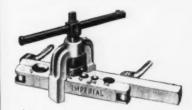
See Your Jobber

HI-DUTY TUBE CUTTER

Free-wheeling ball bearing action makes cutting easier, faster. Cuts hard or soft tubing. Roller type with flare cut-off groove. Makes clean, right angle cuts. Retractable reamer. No. 274-F... for 1/8" to 1" O.D. tubing.

FLARING TOOL WITH SLIP-ON YOKE

Has Imperial's exclusive quick slip-on yoke of forged steel. Makes proper 45° flares on copper, brass or aluminum tubing for tight SAE flare joints. No. 193-F flares 3/16", 1/4", 5/16" 3/8", 7/16", 1/2" O.D. Tubing.



Ask for Catalog 124-A

THE IMPERIAL BRASS MFG. CO., 1217 W. Harrison St., Chicago 7, III.

IMPERIAL

Brass Fittings • Shut-Off Valves Flexible Gas and Oil Lines Strainers • Tube Working Tools Service Aids • Barrel Faucets



1949



RIDES WITH THE WINNER





"Record Breaker" Clips 3 Hours and 12 Minutes Off Transcontinental Record!

Men like Bob McKenzie, the famous transcontinental automobile champion, take no chances when they set out for new records. They know that the failure of any part can undomonths of costly preparation. That's why they specify parts that have been proven absolutely reliable.



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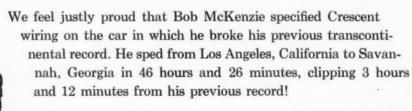
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It's Crescent with champions and people who demand the best automotive ignition cable, starting cable, lighting cable, battery cables. It's Crescent-Wiry Joe when you handle the line that every one knows—the line every one can depend on—the wire and cable line that more

When next in our neighborhood, drop in. See how Crescent-

Wiry Joe automotive cables are made from copper to finished product in one plant under one roof.

and more people specify.



THE CRESCENT COMPANY, INC.
PAWTUCKET, RHODE ISLAND



CRESCEN

VICTOR "JOB PACKAGES"

save time on every gasket job

You can be sure of having all the right gaskets when you use the Armstrong-Victor "Job Package." You simply tell your jobber the make and year of the engine and the nature of the repair. He supplies you with a sealed package that contains a complete set of all the cork gaskets you need for the job.

Armstrong-Victor Gaskets are easy to install, too. Cut from top-quality Armstrong cork composition, these resilient gaskets always fit the parts they're made for, always give you a tight, dependable seal.

Armstrong-Victor "Job Packages" are available for repairs on all makes of cars, buses, trucks, and stationary engines. Always ask your jobber for these gaskets by name.







VICTOR GASKET GUIDE

Victor publishes the most comprehensive Gasket Guide compiled—contains:

- 1. Factory numbers with Victor numbers.
 2. Special indexing where there are numerous motor models.
 3. Markings to show gasket set contents.
 4. Up-to-date gasket popularity ratings.
 Victor Manufacturing & Gasket Company,
 5750 Roosevelt Road, Chicago 50, Illinois.



Armstrong-Victor



SIGN OF GREATER





No DOUBT about it! This is the sign thousands of dealers know means fast-selling auto seat covers. For Suskana Saran leads the field with seat covers that combine smart beauty with incomparable durability—at popular prices.

Motorists from coast to coast are enthusiastic in praising their seat covers of Suskana Saran. For built-in color, trim fit, smooth riding comfort and easy care give them new measures of driving enjoyment. In handsome pre-tailored seat covers, and in custom-mades, Suskana Saran proves its superiority.

Stock the fast-selling seat covers that are backed by national advertising and promotion. Be ready to meet your customers' demand for Suskana Saran.

MO'

SEAT COVER PROFITS

It's the Sign of the Times

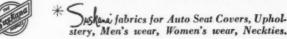


Thousands of alert dealers from coast to coast are displaying this sign. It's the sign that leads to more sales, more satisfied customers and the greatest seat cover profits ever! Have you ordered yours?



Susquehanna Mills inc.





949



ONLY THREE OPERATIONS:

- 1. Your customer sees the Dirty oil and Sludge drain into the Pyrex cylinder.
- 2. The Dirty "Tired" oil then drops into a 15 gallon container inside the OIL SYSTEM PURGER.
- 3. Flushing (an extra profit service) may be made with any reputable Flushing Oil in just 30 seconds.

Consult your capacity chart and put in clean, "live," fresh Oil.

An attractive white enamel unit brings you customers and adds to your profits.

Oil System Purger

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A:NO.
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Pyrex what co

SPRING

MOT

DRAINS THE CRANK CASE IN LESS THAN 2 MINUTES

NATIONALLY ADVERTISED PRICE \$ 1 7 9 . 5 0



Choldun



MANUFACTURING CORP.

New Haven. Conn.

SALES OFFICE: 11 WEST 42 STREET, NEW YORK 18, N. Y. EXPORT OFFICE: 238 Main Street, Cambridge 42, Mass.

SPRINGFIELD PHILADELPHIA PITTSBURGH ATLANTA DETROIT CHICAGO KANSAS CITY DALLAS DENVER LOS ANGELES TORONTO

Triple Action Cleaning . . .

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- 1. MECHANICAL AGITATION
- 2. PRESSURE FILTERING
- 3. PRE-HEATED CHEMICAL SOLUTION

CLEANS COOLING SYSTEM IN LESS THAN 30 MINUTES

NATIONALLY ADVERTISED PRICE \$295.00

> West of the Rockies \$319.00



Choldun PRESSURE-PURG

THINGS TO KNOW ABOUT COOLING SYSTEM CLEANING EQUIPMENT

0: Does the car motor have to be running when using the PRESSURE-PURGER?

A: NO. Heating elements in the Pressure-Purger heat solution to necessary temperature. O: Does other equipment require the motor to run for a long period of time?
A: YES, and this is harmful

to the motor.

Q: Does the PRESSURE-PURGER have any motors, pumps, or moving parts which develop service difficulties?

A: NO. There are no moving parts.

Q: Does other equipment have motor, pumps and moving

A: YES. Q: Does the Pressure-Purger hook up to the caps of the car radiator?

A:NO. There are obstructing

affle plates immediately below the Radiator Cap. The PRES-SURE-PURGER is connected to the 1 3/8" openings of the Radiator and Block through which large "chunks" rust, hose and pebbles are removed into the Pyrex cylinders. One can see what comes out.

DRAMATIC -:- IMPRESSIVE -:- EFFECTIVE Your Customer can actually see the SCALE -:-RUST -:- GREASE -:- GRIME as it is PRESSURE-PURGED from the Radiator and Motor Block!!

Service shops all over the country are equipping with this new, modern, fast, efficient and profitable CHOLDUN PRESSURE-PURGER! No motors or pumps — no moving parts — nothing to get out of order! A merchandising unit as important to better service as any major equipment you now own. Completely safe. Visible tumbler cleansing action, with continuous reversing motion, loosens, dissolves, purges, and filters out rust, scale, grease and grime. Pays all year 'round.





MANUFACTURING

New Haven, Conn.

SALES OFFICE: 11 WEST 42 STREET, NEW YORK 18, N. Y. EXPORT OFFICE: 238 Main Street, Cambridge 42, Mass.

SPRINGFIELD PHILADELPHIA PITTSBURGH ATLANTA DETROIT CHICAGO KANSAS CITY DALLAS DENVER LOS ANGELES TORONTO

RONTO

, 1949

CAR OWNERS REPORTS FROM NEW AUTO-LITER

NEVER S

"SPARK

improv



SENSATIONAL RESULTS ISTUR SPARK PLUGS

Here's what they say.

NEVER SAW SO MUCH CHANGE IN PERFORMANCE"

says surprised driver

After using other brands of plugs for years, I decided to try your new Auto-Lite Resistor Spark Plugs. After replacing narrow gap ordinary spark plugs with Resistors gapped at .040, I can truthfully say that have NEVER seen so much change in the performance of a car in my forty-three years of automobile business, simply by changing spark plugs.



"NOW GETS GASOLINE

SAVING" claims new car owner It is my good fortune to have a set of Auto-Lite Resistor Spark Plugs in my new car. On a recent trip I was concerned about gas mileage because of poor road conditions. But despite the worst possible driving conditions, I found the Resistor Plugs showed a saving in gas.





A Schnatz

"SPARK PLUG INTERFERENCE ITH OUR TELEVISION CHECKED"

says enthusiastic vacationist

a recent 2389.7 mile trip, after alling your new Resistor Plugs, we ticed an appreciable gas saving. e improved performance of our car immediately noticeable — gap ings had not changed during the ng trip. Since we installed the stor Spark Plugs, our car no longer feres with our television set.



"GREATLY SMOOTHS ENGINE IDLE"

says delighted owner My new car had a flat spot in acceleration from low speed and considerable roughness in idle. Repeated trips to the dealer failed to correct this condition

until 1 installed Auto-Lite Resistor Spark Plugs. Immediately the

flat spot disappeared and the roughness smoothed out. Road tests showed remarkable smoothness and quickness of acceleration that had not been obtainable previously.



"NOW THE CAR RUNS BEAUTIFULLY..."

says Station Wagon owner

Our 1948 Station Wagon has given constant trouble. Finally a garage man said all the difficulty was plugs and installed Auto-Lite Resistors. Now the car runs beautifully, the very first time my husband has been really satisfied.

Moclark Perry

Hollywood, California

Earl Behrene

Resistor



MOTOR AGE JUNE 1949



by Leonard Westrate -

Automobile manufacturers report that parts sales this year are averaging from 8 to 12 per cent behind last year. The companies have been actively working with dealers during the first four months of this year helping them to balance inventories. They point out that there is little need for heavy stocks now that the material shortage is over and that since there are no refunds on inventories if prices are reduced, it is to the dealer's advantage to keep his stock balanced with his needs and to avoid heavy inventories, especially on slow moving parts. General price cuts are not expected, but undoubtedly some items will be reduced, especially those related closely to raw material prices.

*

Although the unseasonally mild winter probably accounted for some of the slump in parts sales particularly in such items as batteries and ignition parts, opinion in Detroit is that a general tightening of the economic situation also is a factor. Dealers reported to one large company that plenty of money is available, but customers are reluctant to spend it. One service manager says that customers do not like to spend money for parts and service and then "wind up with just what they had before" as compared with purchase of a new car or some other durable item.

er



Sales of replacement engines and short blocks have slumped badly so far this year. One company stopped production entirely for a month in order to allow field inventories to diminish and in that period did not get a single order from its dealers. Several months ago General Motors estimated that engine replacement sales would drop off 50 per cent this year and the current trend indicates that the forecast was well founded.



Over the stiff opposition of creditors, Federal court in Chicago has authorized an engineering survey to determine whether it is feasible for Tucker Corporation to undertake mass production of automobiles. The creditors maintain that the survey is a waste of time and money since there is no possible chance for the company to get into production.



Because of the Bendix brake strike, the Nash 600 model brakes currently are being supplied by the same manufacturer supplying brakes to Studebaker. As a result, current brakes on the 600 are the self adjusting type. Because of the shortage, Nash has been shipping cars to dealers with only half sets of brakes installed, with the deficiency to be made up by the dealer later.

The parts industry expect sales of batteries and ignition parts to take an upward spurt during hot weather. The reason is that because of the mild winter, replacement of many of these parts was deferred but with the coming of hot weather, batteries especially will play out.

Dateline DETROIT . . . Continued from Page 33

General belief in Detroit now is that price reductions by other manufacturers probably will not immediately follow the latest GM price cut as they did earlier this year. Possible exception are Chrysler Corporation and Studebaker which did not reduce prices in the general reduction during March and April.

Now that Studebaker is committed to use of the new Borg-Warner automatic drive, developments among other independents are expected to come along rapidly. The Studebaker transmission will not be available until very late this year and undoubtedly will be offered on the higher priced Commander series at extra cost. Nash also will have an automatic drive for its Ambassador series late this year, but whether it will be Hydra-Matic, a Borg-Warner unit, or its own design has not yet been decided. With Studebaker breaking the ice, there is a possibility that a Borg-Warner unit may be used by several independents, thus lowering cost for all of them through volume production of a standard model.

*

The small Nash car, mentioned in these columns a few months ago, is creating a flurry of talk in Detroit, but no official decision to build it has yet been made. There is said to be some die work out on it, but this merely may be preparatory so that a quick start can be made if the company decides to go into production. Nash has no illusions, however, about a \$1000 car, but would hope to price it somewhat below the Big Three. The company has a small pancake engine, which might possibly be used in the car.



Both Plymouth and Dodge have released prices on latest models in their short wheelbase lines. Price of the 115-in. wheelbase Dodge Wayfarer roadster is \$1635, plus federal and local taxes. The Plymouth Suburban, an allmetal combination passenger and utility car on 111-in. wheelbase, is priced at \$1740, exclusive of federal or state taxes. Both vehicles are essentially the same mechanically as the standard wheelbase models.

Stockholders of Kaiser-Frazer Corp. have voted down a proposal that the company pay a regular quarterly dividend, when, as, and if earned after last Dec. 31. The company reported a loss for the first quarter of this year of \$5.8 million, compared with a \$2.88 million profit in the same quarter of 1948. Refunds to dealers when the company cut prices cost the company approximately \$4.1 million and was a large factor in the loss showing.



General Motors will start this month to build a multi-million dollar technical center located just outside northeast Detroit. The company estimates that construction of the \$25 million center will require three years. First unit will be the engineering buildings to be followed by research laboratories. The center is on a 350-acre site.



In the opinion of Alfred P. Sloan, Jr., General Motors board chairman, automobile and truck production will be reduced below current levels the latter part of this year. He says automotive products should be in ample supply by then, and for the first time since the end of the war a seasonal trend will be felt in a reduction in sales to customers requiring an adjustment of field stocks to a lower level of consumer deliveries.



Ward M. Canaday has been elected by the Willys board of directors to succeed James D. Mooney who resigned as chairman of the board of directors. Mooney had previously resigned as president but that position has not yet been filled. Delmar C. Roos, vice president in charge of engineering, is now first vice president succeeding Arthur J. Weiland who also resigned.



- by E. J. Hardy -

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Washington wire

A sample survey by the Bureau of Labor Statistics of three cities of varying population and economy indicates that the average city family spends three times as much for purchase and upkeep of private cars as for public transportation. Also, the average family spends from 5 per cent to 8 per cent of total income for this purpose. Cities surveyed and average car expenditures (1948) were: Washington, D. C. (8 per cent or \$388), Richmond, Va. (5 per cent or \$174), and Manchester, N. H. (6 per cent or \$195).

Total first quarter business dividends are estimated at \$2.25 billion on the basis of publicly announced cash payments, which totaled almost \$1.5 billion. The automotive field led the parade, payments rising from \$68 million in the first quarter of 1948 to \$95 million for the similar period this year.



Excise tax collections on replacement parts indicate no reversal in the downward trend in production which began in May, 1948. A drop of at least 10 per cent from last year's output of \$2.5 billion is now anticipated.



Wholesalers and retailers who entered the business field since 1945 have accounted for from \$15 to \$20 billion of annual business since then, according to the Commerce Department. Sales by the newcomers to trade were relatively larger than by the older, established firms.



Motor vehicle operators in the United States paid a total of \$1,342,973,000 in taxes collected by the states on 30,646,486,000 gallons of motor fuel consumed in 1948, according to figures compiled by the Public Roads Administration.

This was an increase of 2,239,428,000 gallons, or about 8 per cent, over the 28,407,058,000 gallons of motor fuel on which the states collected taxes at prevailing rates in 1947.

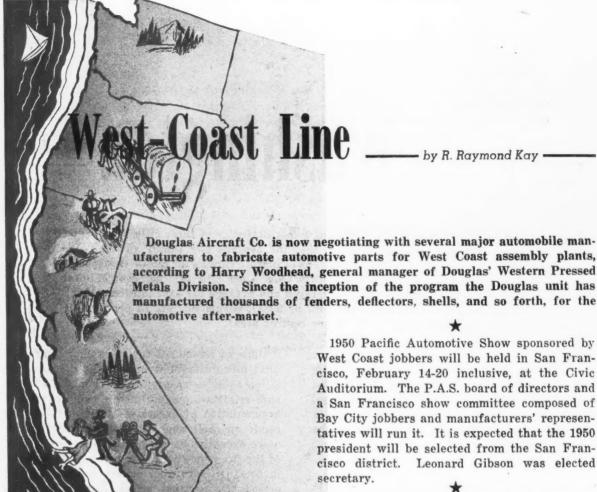
Office of Business Economics finds that while total inventories now bear about the same relation to sales as prewar, both manufacturers and retailers are exercising caution against accumulation of excessive stocks in piling up goods on their shelves. Neither want to acquire excessive stocks on their shelves in face of the (a) somewhat lower 1949 rate of personal income, (b) returning buyers market, and (c) period of unsettled prices. Brightening the outlook are the OBE figures indicating more families are saving more against the day of lower prices.



The number of veterans training to become automotive mechanics and repairmen totaled 45,814 on November 30, 1948, according to a recent study made by the Veterans Administration. This represents about a 25 per cent drop from the previous year.



Based on a survey by the Office of Business Economics, industry and business generally expects 1949 sales volume to drop no more than 5 per cent over 1948 figures. In the automotive field, sales are expected to increase. Smaller businesses are more pessimistic of the lot, expecting declines of as much as 8 per cent or more.



It can't be done! A dissatisfied car owner may be stopped from plastering his car with signs running down the car and the manufacturer and parking it near some dealer handling that make of car. This is a recent decision of the California Superior Court.

1950 Indianapolis Flash. . . . Big racing car engines will soon be obsolete! Drastic reduction in engine size for Indianapolis racing will surely come about in three or four years! That's the opinion of Lou Meyer, vice-president, Meyer & Drake Engineering Corp., Los Angeles, builders of the Offenhauser engine. Anticipating such reduction, his company is building a four-cylinder supercharged 122 cu. in. engine, capable of approximately 300 hp, for the 1950 speed classic. It will be used in a front drive model with a Kurtis-Kraft chassis. Estimated weight will be between 1300 and 1400 lbs, compared with the present 1800 lb average.

1950 Pacific Automotive Show sponsored by West Coast jobbers will be held in San Francisco, February 14-20 inclusive, at the Civic Auditorium. The P.A.S. board of directors and a San Francisco show committee composed of Bay City jobbers and manufacturers' representatives will run it. It is expected that the 1950 president will be selected from the San Francisco district. Leonard Gibson was elected

Radioactive tracers are being used successfully in a cheaper, faster, more accurate method of determinig the influence of fuels and lubricants on engine wear. The engineers at California Research Corporation, where the method was developed, believe that it is well adapted to the investigation of engine operating conditions such as speed, load, oil temperature, jacket temperature, and air fuel ratio. Similarly, the critical parts of transmissions, differentials, steering mechanisms can be evaluated.

New car prices still too high? It's all in the way you look at it. A pound of Chevrolet costs about half the price of a pound of butter—less than one-half the price of steak—and really low in cost in comparison with some other manufactured products: vacuum cleaners \$4.50 per pound; typewriters over \$5 per pound; toasters, \$4 per pound. "We are practically giving cars away," said H. R. Boyer, Director of GM's Production Engineering Section, at a West Coast GM Auto News Clinic.



KURTIS-KRAFT

Will Build a Sports Car

Available in knock-down kit form, or completely assembled at the factory, a new California car is on the market.

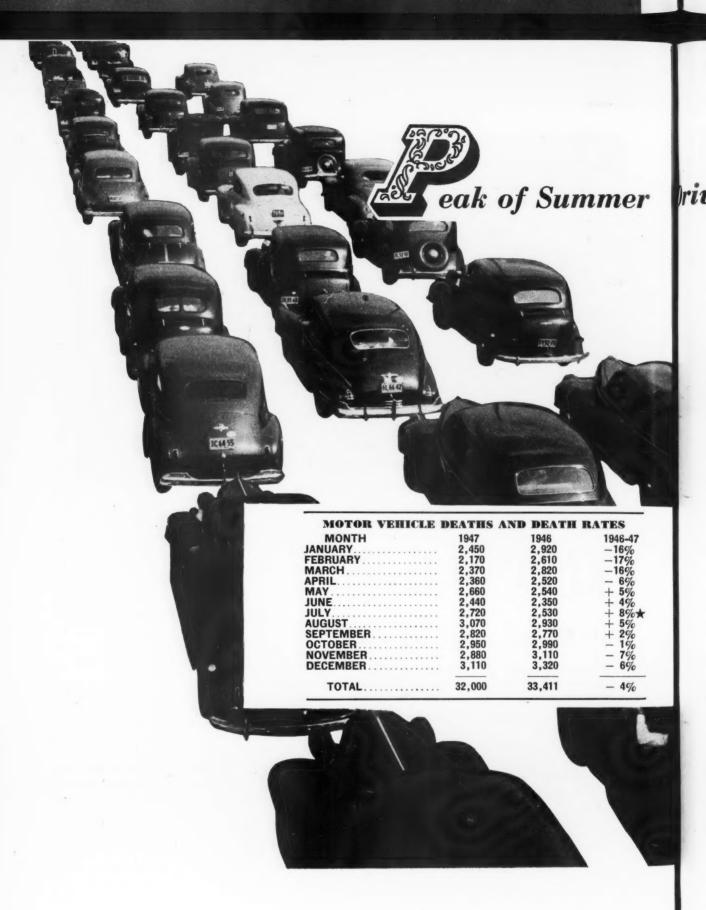
AUTOMOBILE enthusiasts who have long dreamed of assembling their own cars will be able to buy the new Kurtis convertible in kit form. Kurtis-Kraft, Inc., largest racing car builder in the country, feels this kit will be the answer to many a car owner's prayers. The price of the complete car is approx-

imately \$3990, FOB Los Angeles, and the kit will cost from 30 to 35 per cent less.

The company now has in production a limited number of the Kurtis Sports Cars to be completely factory assembled at the company's Los Angeles plant. Plans call for future cars to be available either fully assembled or in kit form.

Designed with a low-slung body on a 100-inch wheelbase, the car features a choice of engines ranging from 82 to 160 horsepower. The body panels are constructed of fibre glass, with removable plexiglas side windows. The car has independent front suspension with semi-elliptic suspension on the rear. Overall length is 169 inches, height 51 inches, and width 68 inches. The car weighs 2300 pounds.

According to Kurtis-Kraft, Inc., assembly of the kit is simplified, with no machine work necessary and only hand tools required to do the job. An instruction booklet will guide the assembler, and a unique wiring loom will facilitate the wiring installation. The kit will include everything necessary to get. the car ready to run on the highway.



by Frank P. Tighe, Editor ___

riving is Approaching

Cars Must be Kept Safe

STATISTICS just don't go far enough—when it comes to establishing the number of highway accidents due to mechanical failure of cars involved.

How can they? The driver's awfully dead and the car is smashed up.

Yet something can be done about this. And, you're the man to do it.

Cars must be kept safe.

When you consider the vast amount of time, energy and money spent upon the problem of highway safety and the truly laudable results accomplished, one wonders why automotive servicemen have not fully grasped the opportunity to render an honest and forthright public service in keeping your

customers' cars safe this year.

For without safe cars the problem of highway safety can never be licked.

Just ahead of us is the period when cars are used most—the peak of summer driving. Studies show 73 per cent of all vacations are taken in the months of July and August; and, more than 80 per cent use their automobiles as a means of travel, whether it be 50 miles to the seashore or 2500 miles across country.

Couple these facts with the stark statistics

on the increase in highway death-rates (highest in the month of July) and you realize the urgency for rigid safety inspection and preventive service.

Cars must be kept safe.

You have the ability and experience as well as the right tools and equipment to do the job for all your customers. All of 'em, not just the wise and cautious driver who has sense enough to seek your service.

The laws of several states require safety inspections at regular periods. But that is a minimum for safe car performance. The states will allow cars on public highways if they pass certain standards on a certain day during a given inspection period. However, the very day following such approval, any car could (Continued on page 80)

budisales

TO CITECK

ACCIDENTS

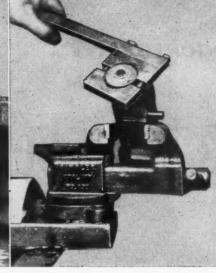
DUBBLE CHECK

YOUR CAR

NEW JERSEY AUTOMOTIVE TRADE ASSOCIATION

Signs like these will help remind your custmers that cars must be kept safe.







Honing master cylinder with special equipment after the cylinder has been measured.

Special tool for removing the serrated nut on the end of the master cylinder.

Using a clamp to hold lining in place while drilling and countersinking the lining.

How to Use Your

Brake Equipment

To satisfy the toughest customer and eliminate costly come-backs follow this complete check-list suggested by Jack Montgomery Technical Editor

G OOD brake equipment pays for itself many times over when used properly. Listed here are the operations necessary for a thorough job.

Cylinders and Lines

Check all wheels and master cylinder for leaks.

Check metal lines for kinks and worn spots. Examine rubber hoses for deterioration.

Examine wheel cylinders for scores.

After honing cylinders check with No-go gate. Check master cylinder push rod adjustment.

Clean filler cap and open vent hole.

When rebuilding cylinders dip all parts in brake fluid before reassembling.

Check master cylinder mounting for looseness.

Tighten all hydraulic line fittings.

Pressure bleed system.

Examine stop light switch and connections.

De-burn the master cylinder compensating hole after honing with the use of special tool.

Brake Drum Service

Clean and check drums for scoring.

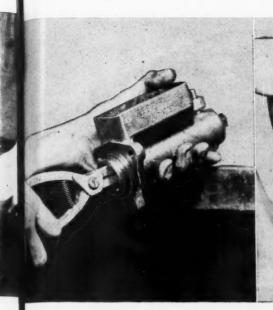
Examine for bell mouth condition and out-of-roundness.

Check for glazed surface, hard spots, and heat checks.

Examine for cracks or breaks.

Check drum oversize, this is important when shims are needed under the lining.

Install new grease seals where needed.



Above. Special tool for removing burr after honing.

Above right. Removing lining high spots on a sander.

Right. Shoes with lining in place under pressure, ready to go into the bonding oven.

SPECIAL EQUIPMENT USED

Drum lathe
Brake riveter and sander
Bonding outfit
Pressure bleeder or jar
Drum and lining gages
Spring pliers
Cylinder clamps
Hand tools
No-Go gages
Pedal jack
Cylinder hone
De-burring tool
Lining clamps
Wheel removing equipment

Use special gauge to set anchors. Turn all brake drums when needed. Clean and check wheel bearings.

Brake Shoe Service

Clean shoes and check for distortion and twist.

Examine shoes for broken welds and enlarged rivet holes.

Polish shoe before relining. Straighten shoes when needed.

When applying lining use a shoe clamp to in-

sure a tight fit with equal pressure at all points.

Sand lining after it is applied to shoes. Clean backing plates and check for twist and distortion.

Check shoe pads for roughness and correct.

Check all brake springs for proper tension and colors.

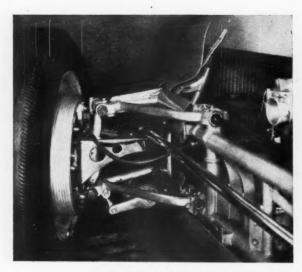
Use brake shoe gauge when setting anchors.

Pedals and Linkage

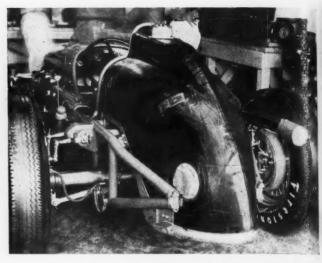
Check and free-up emergency brake cables and linkage when needed.

Examine emergency brake lining and adjust if necessary.

Rebush or replace brake pedal where needed. Check parking brake efficiency.



Left front view of the Kurtis Kraft suspension. This car was driven to second place by Johnny Parsons.



Right rear view of the Kurtis Kraft showing the shock location and the finned brake drum.

Safest race in history . . . Two cars drive non-stop . . . First ten finishers all use 4 cylinder engines . . . Holland wins in record 121.327 mph . . . Nalon



Lou Moore, owner and builder of the Blue Crown Specials, and his mechanic getting Bill Holland off to a flying start.

sets competition lap record 126.56 mph by Jack Montgomery

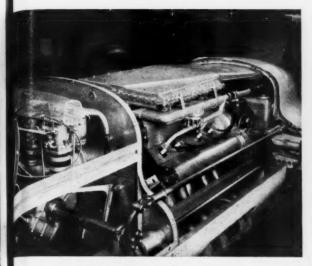
Non-Stop at INDIANAPOLIS!

TEW cars, new and improved suspensions and engines, made the 1949 500-mile race classic the fastest and most closely contested race in history.

Every year fewer 6- and 8-cylinder cars are being entered. The 4-cylinder jobs have the advantage of better gas mileage and can just about equal the same speed, and this year for the first time all 10 place winners were powered with 4 cylinder engine.

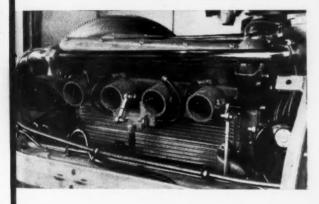
Due to the design of the track, power is secondary—what they need most is a car that handles well. This is demonstrated by the fact that the Novis and Maseratis are capable of speeds up to 180 miles per hour, yet they can only average about 133 miles per hour around the oval, a fraction more than the 4-cylinder cars.

Each year records are broken with higher qualifying speeds and faster time for the 500 (Continued on page 118)

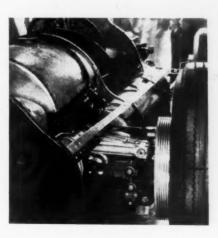


View of the Novi engine. Note the carburetor arrangement and supercharger location.

Below. View of the fuel injector system that was used on the Howard Keck Special and driven non-stop by Jimmy Jackson.



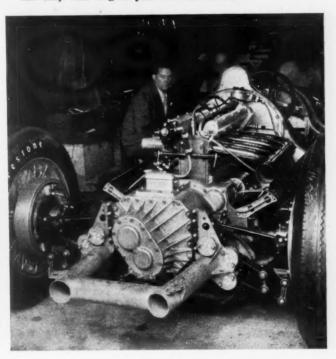
Below. Front end view of the Rounds Car showing the front suspension and cooling system.





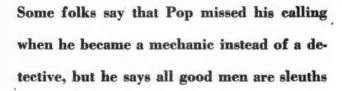
Above. Norm Olson, owner and builder of the Olson Special, giving the rear end a final overhaul before the race.

Below. View of the Rounds Car showing the rear engine, suspension and frame. This was the only rear engine job entered in race.





Pop Gets a Hot Hunch



by Charles M. Kenyon, Managing Editor

Pop O'NEILL chuckled to himself as he hung up the receiver. He could imagine the time Pete must be having with a station wagon full of youngsters stalled out on the road. He tugged at the lobe of his ear while he considered the possibility of sending Tommy Winters, his young apprentice, out to get Pete's Ford running again, then decided he'd better send Larry Tate.

As he entered the back room, Pop saw Larry



honing a master cylinder on the new hone.

"Quite a gadget, Pop," said Larry cheerfully. "It sure makes this job easier."

"I hope so," replied Pop.
"That's why I bought it. An'
if it keeps you happy at 4
P. M. it must be quite an

invention in more ways than one."

"Oh it ain't that," protested Larry. "I don't mind doin' a days' work—that is when my feet don't hurt or my sore back don't ache."

"Sore back?" asked Pop in surprise. When did you hurt it? This mornin'?"

"Well, no," said Larry. "It musta been when I was a kid. I've always had it more or less."

"Even after workin' with a man for 15 years," remarked Pop dryly, "you can still learn things



About twenty minutes later he saw the station wagon. Pete was obviously having his hands full.

about him every day. Does it hurt much?"

"No," admitted Larry truthfully, then added, "It just makes me sorta tired a lot of the time."

"Oh, that kind of sore back," put in Tommy Winters who had joined the couple. "We had a lot of those in the Army. Some types of men seem to get them easily."

"Yeah," said Larry seriously. "I'm that type, all right."

Pop cleared his throat, "Much as I dislike breakin' up this highly technical dicussion of medical categories, Larry, I guess I'll have to send you out on a job."

"Okay," said Larry eagerly. "Where do I go?"
"About five miles south of town on Route 37.
Pete Whittle is stuck with the camp station wagon—'48 Ford. He says it just died on him an' won't start again."

"I'll take a coil and condenser along, just in

case," said Larry. "That's what it sounds like to me."

"As good a guess as any," admitted Pop. "But it wouldn't hurt to look at the car you're diagnosin' before you cover any bets."

"He might be out of gas," put in Tommy.

"He might," conceded Pop. "But he ain't. He checked that before he called."

"Whatever it is, I'll fix it," bragged Larry as he picked up his tools and walked toward the tow car.

About 20 minutes later he saw the station wagon. It was parked at the edge of a field fenced with a high wire fence. In back of the car was a tap-room. In front was a greasy hot-dog stand and alongside lay the heavily travelled concrete road. Pete was obviously having his hands full keeping the boys safely

(Continued on page 84)

by Philip Brenton

FULLY modern and up to the minute service plant is just as practical for a smaller city as it is for the large metropolitan centers, according to Orrin B. Hayes, Oldsmobile dealer at 543 W. Michigan Ave., Kalamazoo, Mich. In his 28 years as an Olds dealer Mr. Haves has always been a pioneer in service, a factor which he believes has a lot to do with his position as one of the largest volume dealerships in the state. While other dealers consider service as the "grief" end of their business, Mr. Hayes always has regarded it as an asset, a builder of good will. Before the war his service

department carried 90 per cent of the overhead, and today it carries 60 per cent. Actually Mr. Hayes doesn't care too much about having service absorb overhead, gratifying as that might be. He regards his service department as a "selling tool" that balances out his complete operation, not as a profit maker. "Automobile service

Service Promotion lis



Orrin B. Hayes

is the hardest dollar a man spends," he asserts. "You never lose anything by giving the service customer a break."

The Orrin B. Hayes plant consists of three well-equipped buildings. The main building is 86 ft. wide by 150 ft. deep. It was remodeled in 1937 at a cost of \$25,000, and today it and the 250 ft.

x 259 ft. lot are valued at about \$100,000. The building fronts on the main street of the town and on highway U. S. 12, and the lot is spacious enough for a large used car space and for customer parking. In addition to the main building there are a 66 ft. & 50 ft. paint shop and a 50 ft. x 50 ft. body shop to the rear.

A portion of the shop as seen from the control tower. The tower operator can see every part of the shop.

The Hayes shop has special equipment for Hydra-matic service. The speaker at the mechanic's left connects him with the tower.





is Sales Promotion

"A shop should have more than just the essential equipment for service," states Mr. Hayes, and his shop has every type of equipment that will improve the quality of the service regardless of the cost. The total investment exceeds \$35,000, and includes two analyzers, an aligner, a wheel balancer, steam cleaning equipment, a twin post

hoist, special hydromatic tools and other Olds tools, a radio laboratory, two wreckers, two pick up trucks and a motorcycle.

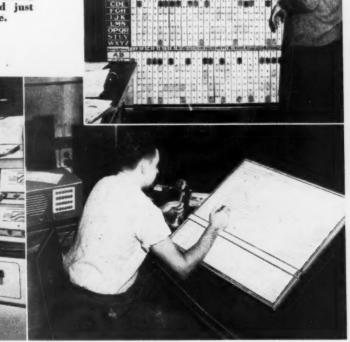
The 21 mechanics employed by Hayes are all factory trained men of high caliber, and many of them have been with him for a long time. The (Continued on page 102)

Orrin B. Hayes practices an aggressive customer follow-up policy facilitated by this elaborate board.

Below right. The tower operator knows exactly where each car is and just about when it will be done.

The service plant is attractive and clean, with all of the latest equipment available for the mechanics' use.

Orrin Hayes' organization uses the shop to sell new cars while the new car sales are bringing extra business into the shop



Aligning Front Ends on 1949 STUDEBAKERS

The information contained in this article covers
all models of Studebaker from 1947 on, describing
and illustrating the correct alignment procedure by Arthur H. Nellen, Jr.,

Assistant Editor

THE Studebaker planar front end differs from most other independent suspension systems in one main respect—a single semi-elliptical transverse spring replaces the usual pair of coil springs. The ends of this leaf spring rest on the lower control arm, where the bottom of the coil spring would be seated on coil spring suspension. The spring is fastened at the center to the cross section by U bolts.

There are many factors over and above caster, camber, toe-in, king-pin inclination, and toe-out-on-turns, which enter into proper steering on the road. The wheel bearings should be checked for tightness; tires inflated to the recommended pressure; and the king-pins, tie-rods, control arms, steering linkage, and shock absorbers checked for wear. In many cases it will be found that cars which have been brought in with complaints of tire wear or hard steering can be taken care of by correcting one or more of these items. Of course, a common cause of

tire wear is poor wheel balance, and it pays to determine whether or not this is the trouble before bringing the car up on the alignment rack.

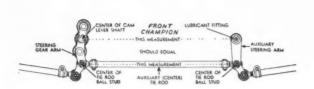
CAMBER

The Studebaker Champion and Commander should be checked for camber unloaded. Bounce the car up and down, checking to see that it returns to its original position each time.

Camber is adjusted by removing or inserting shims between the steering knuckle upper control arm brackets and the frame. There are two thicknesses of shims, the thicker being equal to four thin ones. One thin shim changes the camber by approximately ½ degree. When making adjustment, it is necessary to add or remove the same number of shims at both the front and rear brackets. The camber angle should be ½ degree plus or minus ¼ degree.

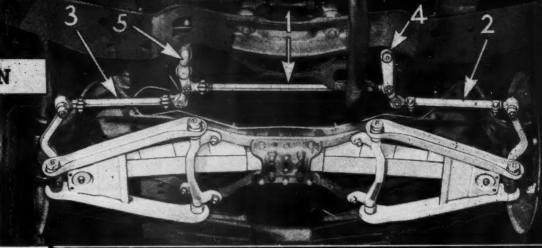
(Continued on page 76)

Steering linkage measurements on the Champion. Steering linkage measurements on the Commander.





CHAMPION



COMMANDER

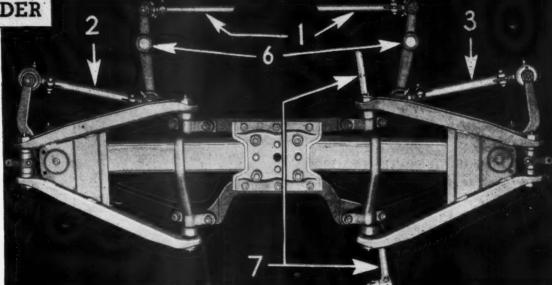
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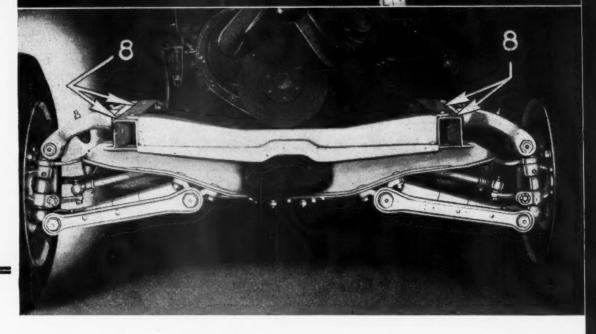
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1949





- 1 2 3 4
- Auxiliary tie rod Right tie rod Left tie rod Auxiliary steering arm
- 5 Steering gear arm 6 Bell crank shaft levers 7 Reach rod 8 Camber shims



A PHILADELPHIA FIRST

Philadelphia boasts the first exclusive motor-cab service for a hotel. The Lafayette Hotel of that city has arranged with the Pennsylvania Vehicle Co. for cabs that will be held for the exclusive use of patrons of the hotel....

Motor Age, Dec. 14, 1899

THE UNITED STATES LEADS

Despite all the claims of the European press, Dr. George H. Benjamin, an automobilist of this city (Chicago) who has just returned from the "other side," asserts that there are more real automobiles in use in the United States than in any other country in the world. . . .

"No country has developed the manufacture of pleasure vehicles to the same extent as the United States has done," he continued. "The reason for that is, to a certain

extent, competition. The manufacturers are always trying to improve their vehicles, and do not count the cost in their endeavor to obtain perfection. They get the best models and apparatus of foreign manufacturers and improve on them. They have establishments devoted to the manufacture of automobiles exclusively, while abroad the people are content to attach a motor to any type of conveyance and call it an automobile."

Motor Age, Dec. 28, 1899

WILLARD STORAGE BATTERIES

Fifty years ago in MOTOR AGE, the editor devoted three pages to describe "a neat catalogue" issued by Sipe & Sigler of Cleveland describing Willard Storage batteries.

The most interesting feature of the catalogue is the statement that they have reached a point in the construction of their batteries at



The Chicago Electric Hansom Cab

which the latter may be charged to their full capacity in 45 minutes or within ten per cent of full capacity in half an hour.

. . . In the most commonly sold size-furnishing about 900 kilowatts of current-which, like other sizes for automobile use, is composed of forty cells, in four trays, the amperage for the 45-minute charging period is 140 amperes during the first 20 minutes, 100 amperes during the next 5 minutes, seventy for the next 5 minutes, thirty for the next 10 minutes and ten for the last five minutes. The voltage should not exceed 2.6 per cell at the last charging rate, the battery being adapted to be charged from the ordinary 110 volt circuit.

(Good old MOTOR AGE, right in there with the latest service information—fifty years ago.)

Our old friend the editor adds...
... In conclusion, the pamphlet sets forth the advantage of electric automobilism. It is needless to say that the advantages are viewed from a favorable standpoint but the whole subject is treated in an evident spirit of fairness.

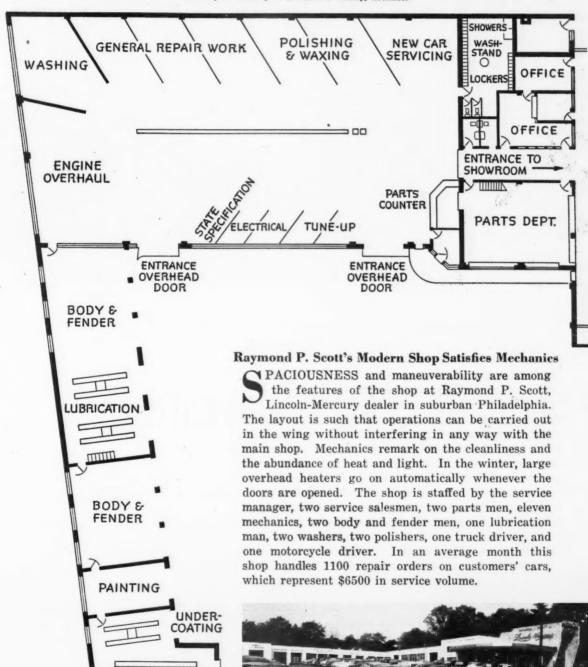
A Fashionable Parade in New York's Claremont



FLOOR PLANS

FOR BETTER SERVICE

Floor plan courtesy of J. Bedford Wooley, Architect



WHEEL ALIGNMENT

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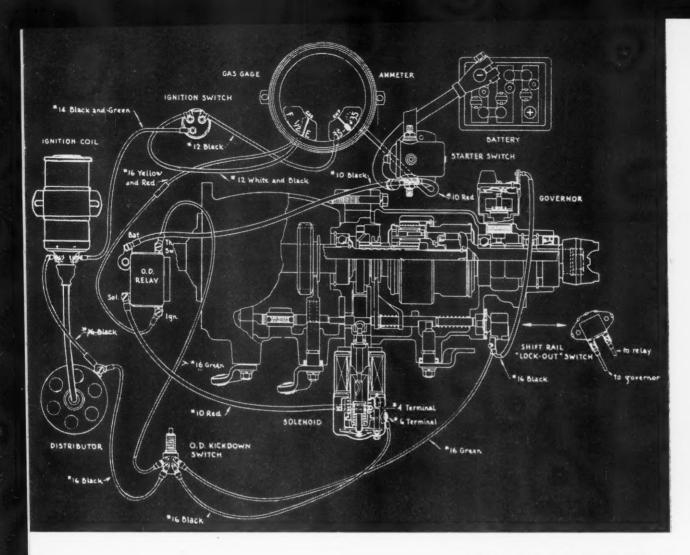
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Wiring diagram of the electrical system on the Warner overdrive. Note the lock-out switch on the shift rail-

How the Warner Overdrive Operates

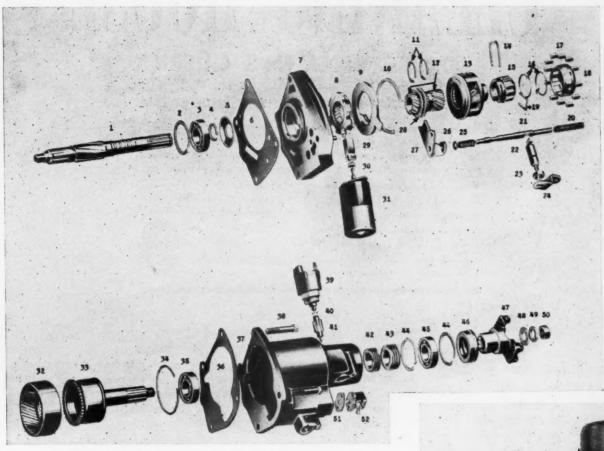
OST makes of cars now offer overdrive as optional and if a prospective car-owner desires this, he should be able to get it as factory - installed

equipment. On all of the cars so equipped (with the exception of Packard and Hudson models), the overdrive operates in fundamentally the same manner, with minor variations from the arrangements as shown in the photographs. These variations relate to slight differences in the electrical circuits and the external housings of the over-

There are nine different makes of cars which now come with this unit as optional factory installed equipment

> drive unit proper, but all the essential parts are the same, and the operating principles thereof follow through in much the same manner. This is how the Warner Overdrive operates with the part name followed by the corresponding number on the exploded view.

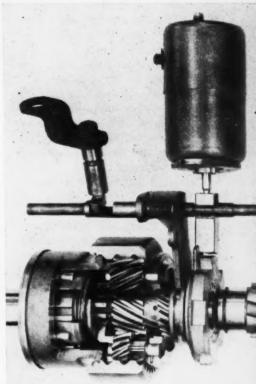
The Transmission Main Shaft 1 extends



- Splined (driven) shaft Front bearing snap ring
- Ball bearing
- Snap ring Oil baffle
- Bearing retainer gasket
 Front bearing retainer
- Sun gear plate
 Cover and trough assy.
- 10. Cover plate snap ring 11. Sun gear snap rings
- Sun gear
- 13. Pinion cage assembly
 14. Free whl., cam rtr. clip
 15. Free whl. roller cl'ch cam
- 16. Free whl. roller rtr. spr'g
- 17. Free wheel rollers
- 18. Free wheel cage
- 19. Free wheel cam ret. clip
- 20. End plug
- 21. Shift rail
- Control shaft Control lever seal
- 24. Control lever
- 25. Retractor spring 26. Shift rail washer

- Shift rail fork 28.
- Sun gear shifting collar 29.
- Stationary gear pawl Solenoid plunger
- 31. Solenoid
- 32. Ring gear
- 33. Main shaft assembly
- Ring gear snap ring Main shaft bearing 34.
- 35.
- 36. Overdrive housing gasket
- 37. Overdrive housing 38. Housing to trans. bolts
- Overdrive governor
- 40. Governor gear spacer
 41. Governor driven gear
- Governor drive gear 42.
- 43. Speedometer drive gear
- 44. Main shaft snap ring 45. Main shaft bearing 46. Main shaft oil seal
- Transmission end flange 47.
- Main shaft nut washer
- Shaft nut lock washer
- 50. Main shaft nut
- Rail switch gasket
- 52. Rail switch

through the Overdrive Sun Gear 12, and is splined into the Pinion Cage 13 and Roller Clutch Cam 15. When a driving torque is imposed upon Cam 15, Rollers 17 are forced outward into wedging contact with Outer Race 33, forcing the latter to rotate. On the other hand, if Outer Race 33 tends to turn faster than Transmission Main Shaft 1, Rollers 17 will release, permitting the Roller (Continued on page 92)



Cutaway view of the Warner overdrive unit, showing the solenoid, shift-rail and the internal parts.

CLEARING HOUSE

FOR SERVICEMEN'S QUERIES

TROUBLE-SHOOTING IN THIS ISSUE

When you run into a job that has you stumped, write Readers' Clearing House. Besides receiving helpful suggestions, you may have the same problem that is baffling someone else. Among the many problems sent in recently are some tough ones found when:

- · Chevrolet leaks oil into crankcase
- Ford engine has peculiar noise
- · Dodge heater won't stay hot
- · Graham cuts out over 40 mph
- Noise is heard in Chevrolet rear
- · Lock-in slips out on Chrysler O.D.
- International has strange noise
- · Bus knocks tops out of pistons
- Lincoln V-12 loses compression
- Chrysler wiring causes confusion



JACK MONTGOMERY

Technical Editor

Chevrolet Increases Crankcase Oil Volume

We are having difficulty with a 1938 Chevrolet Master which continues to increase the volume of oil in the crankcase. In 500 miles the dipstick will show from one to two quarts overfull.

The oil always looks clean, does not show appreciable dilution, and still has good body. No traces of water or emulsification can be detected. Gas mileage is good and the car runs perfectly.

We have checked for gas leak, cleaned and completely overhauled the carburetor, replacing all jets and accelerating parts, installed new fuel pump and checked the choke assembly. The crankcase still fills up.

If you can give us any ideas on how to correct this trouble we would be sincerely grateful. F. W. Walton, Automotive Service, Exeter, California.

MOULD say that if the fuel pump and carburetor is in good condition, the only other possibility would be a leak in the block where the oil feed line comes through. This line is soldered at the fitting where it goes through the block and sometimes when the head is removed this seal is broken and that permits water to leak into the

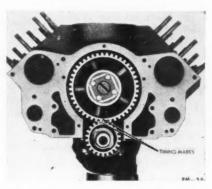
crankcase, raising the oil level.

I would suggest that you remove the valve side plate and inspect this fitting to ascertain whether or not it is leaking. Sometimes emulsified water is difficult to detect.

Peculiar Noise Heard In Rebuilt Ford Engine

Recently we installed a rebuilt engine in a 1940 Ford. When we started the engine it had a peculiar knock, it sounded like a piston slap and it was more pronounced on quick acceleration. We have tried shorting the plugs but that doesn't help either. Can you help me on this problem? Lansdowne Motor Service, Philadelphia, Pa.

I WOULD suggest running this car a thousand miles or so to



break the engine in. If the noise still persists I would check the timing gear before disassembling the engine as a noise like this sometimes is heard when an aluminum timing gear is used.

Heater Stays Hot for Short Periods of Time

I have a 1935 Dodge with heater troubles. For the first fifteen minutes you have good heat, then all at once it puts out cold air until you stop and let the car sit about an hour. Then when you start the engine again you get heat for awhile and then cold air. So far, I have tested and renewed the thermostat, back flushed the cooling system. I used a good cooling system cleaner, replaced heater hose and connections, and bled the heater.

Anything you might suggest will be appreciated. Phil Worthen, 2800 Sullivant Avenue, Columbus, Ohio.

UNDERSTANDING just how a hot water heater operates helps no end when trouble develops. Circulation of the water is determined by the suction action at the water pump. Water circulates through the heater by suction and not by pressure. Water circulation through the heater is extremely rapid, circulating as much as 24 to 28 gallons per minute at 40 M.P.H.

So, having the hoses in good shape without kinks or bends, is very important.

When installing a heater it should be so mounted that the top of the heater is at least two to three inches below the water level in radiator. The heater will not be efficient unless water in the cooling system is at least 160 to 180 degrees.

1939 Graham Cuts Out at Intervals Over 40 MPH

I have a 1939 Graham that cuts out at regular intervals above 40 M.P.H. When driving the car you can feel it lose about 2 M.P.H. just like the brakes when applied. I took the muffler off and you can hear it cut out. This is what I have done. Rebored it to .045, used .040 oversize rings, ground the valves, checked the valve springs, new bearings, timing chain, new spark plug set at .025 in. I have tried three distributors, set points at .020 for best results and have tried two carburetors. I removed the super charger and used a V-8 carburetor. This intake manifold is made so one side of the carburetor feeds three cylinders and the other feeds the back three. But there is no heat riser. It has plenty of pick-up and power. Gas mileage is 15 M.P.G. at 60 M.P.H. in overdrive. The motor warms up quick. I don't have any choke on but it starts on cold mornings O.K. without one. Fred Mc-Clure, Stockland Garage, Stockland, Illinois.

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I WOULD suggest having the distributor checked on a reliable distributor tester, especially the vacuum and centrifugal advance. Also, I would install a new distributor cap and wiring, as well as the coil primary wire.

I would recommend taking a compression and vacuum reading. It is possible that the valve springs might be weak, in which case I would suggest grinding the valves and installing all new springs.

Thumping Noise Heard In Chevrolet Rear

We have a 1948 Chevrolet that develops a thumping noise underneath every time we put three people in the rear seat. We have done just about everything we can think of. The car has 5000 miles on it and everything was tightened and retightened. All shackles are in good shape and we are sure the exhaust line is not hitting the underneath of the car. This problem sure has us stumped. Bob's Service Station, Glenside, Pa.

A NOISE like this isn't unusual on a Chevrolet due to the way



the torque tube is mounted. This noise can be eliminated by removing shims at the ball housing. Actually the ball housing gasket is the shim. This gasket can be pulled apart. Remove enough shims until a slight drag is felt on the ball housing.

Lock-In Slips Out on 1936 Chrysler Overdrive

I overhauled the transmission and overdrive on a 1936 6 cylinder Chrysler and am still having trouble. The lock-in button slips out on down grades. I replaced all overdrive parts, also gave the cable more throw but it still slips out in all gears. Can you help me with this? Bud Northup, 250 Willow Street, San Jose, California.

I WOULD suggest you carefully check the overdrive control shift fork, spring and rail for wear. I would also install a new control spring or stretch the old one. If you haven't replaced the thrust washer do so as excessive endplay will cause it to jump out of mesh.

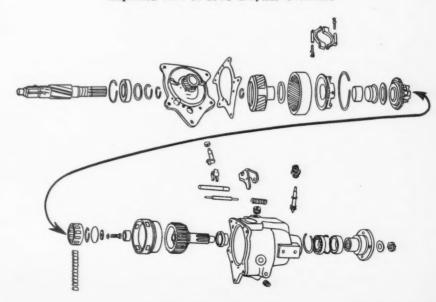
Noise In International Has Owner Stumped

I have a 1947 Model 1 ton International truck with a four speed transmission.

About 4500 miles I kept hearing a clunk or knock, whatever it may be called, underneath the floor board. As it became worse at 9754 miles, the following work was done: valve job (as valves were sticking or were burnt), put in new valves, new spark plugs, .006 in. end play taken out of crankshaft, flywheel checked, new throw-out bearing replaced, transmission overhauled and replacements put in, and bearings replaced. On the differential, I replaced the ring and pinion, which were proven to be defective. This noise is heard at idling and running speed.

The second operation was at (Continued on page 56)

Exploded View of 1936 Chrysler Overdrive

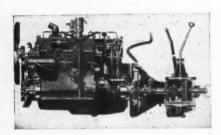


Clearing House Continued from Page 55

about 10,400 miles. I tore apart the transmission and put in all new bearings, a new clutch disc, and tore apart the differential and put in new bearings.

After all this was done I still have this clunk or knock which seems to come from underneath the floor board. The floor board is not loose as it has 300 to 400 pounds on it. Shorting plugs seem to have an effect on this noise. I would appreciate whatever advice you can give me. A. J. Arcuri, ARC Parts Automotive Supply Co., 747 Elizabeth St., Utica 3, N. Y.

REGARDING your 1948 Model KB 3 International truck that has an annoying knock in it. I am



inclined to believe that it is caused by the motor vibrating, causing the exhaust pipe or muffler to strike the frame.

If the knock cannot be shorted out it is quite obvious that the noise isn't in the motor and after overhauling the transmission and rear I feel quite sure that the noise is caused by the engine vibrating.

As to the noise in the rear I would suggest having it adjusted once more.

Chevrolet Bus Knocks Tops Out of Pistons

I'm writing you about a 1946 Chevrolet bus with a high torque motor that we have had trouble with. We installed a set of rings and piston pins, adjusted the mains and connecting rod bearings, reseated the head, refaced valves and rocker arms, and adjusted valves 6 and 13. The timing was perfect. We ran it fifteen minutes at a fast idle and then took it on a ten mile road test. It sounded and performed like a new one.

The driver and his load of about

30 passengers were about fifteen miles out when at the bottom of a long hill, an intake valve head came off, knocking the top out of a piston. We could see where every intake valve hit the top of the other five pistons. Then after replacing piston, rod, valve and checked timing gear, it was again OK. But with the same amount of passengers and almost the same spot at the bottom of a hill it happened again.

The owner carried it to another garage but the same thing happened to them. After this they installed a new short block, using the old head and valves. The motor has been doing fine for two months now.

It has been claimed by an engineer that, being overloaded and driving at a fast rate of speed down a hill, and letting up off the accelerator would cause this. I do not understand it. Would you please help me? T. N. Wilson, Jr., Wilson's Garage, Route 2, Greer, South Carolina.

I WOULD say that this is an unusual condition, but I have heard of cases where the engine did do just that. The cause of this trouble was from the connecting rods stretching. It seems where heavy loaded trucks use the engine as a brake when going down long inclines, the engine exceeds its maximum RPM's.

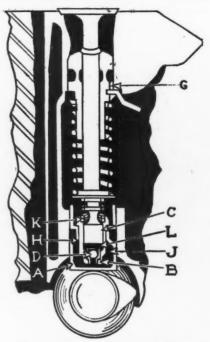
No Compression on Lincoln V-12 After Overhaul

I have a 1942 Lincoln Continental V-12. We rebuilt the motor completely, new hydraulic lifters, valves, springs. Yet there is no compression on 3 and 5 cylinder on each bank. We have torn the motor down 3 times, get very little compression.

Hope you can help. Fell Texaco Service, 1302 Montana, Santa Monica, Calif.

IF THIS engine had compression before you worked on it I would suggest removing the manifold and checking your tappet clearance. It seems to me that after the lifters fill up, they push the valves off their

seats which would account for this condition.



The correct clearance is .030 in.-.070 in. with the tappet held down.

Chrysler Generator and Wires Are Giving Trouble

I am having trouble with the generator on a 1946 Chrysler. There are 2 wires leading from the armature post on the generator. The large wire was the "A" wire but I could not find what the second wire was. There is also the field lead. The generator works only when I ground the generator to the engine. If I disconnect the jumper, the generator works while the engine is running and when starting the engine again, the generator does not work until I ground the generator again also the cutout relay vibrates at times. Would you give me the answer as to the trouble? Laurence Grover, 517 Aldine, R-207, Chicago, Illinois.

R EGARDING the trouble you are experiencing on a 1946 Chrysler with the generator, I am inclined to believe that the regulator ground is at fault. I would make sure the ground stop on the regulator base is secured properly and the mounting screws are tight.

As for that second wire you mentioned, I cannot locate it in the wiring diagram. I would trace it through the harness and find out where the other end is attached.

Motor Age PHOTO COMICS



Man waits not for time nor tide; He just wants his Sunday ride



While down the sidewalk, peaceful-like Comes this fathead on his bike



Man looks up with much surprise—
What is this that greets his eyes?

"I'll stuff this paper down your throat!
It's guys like you that get my goat."



Then there comes a deafening crash!
Fathead wakes up in a flash.
"Riding a bike while reading a paper
Could prove to be a fatal caper!"



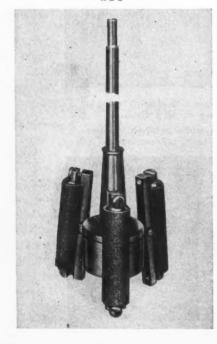


NEW PRODUCTS SHOW WINDOW

313



314



313

Industrial Research, Inc., Phoenix, Arizona, announces the Flush-o-matic Radiator Service, for cleaning and flushing car radiators and cooling systems. This unit weighs 45 pounds, is 24 inches high, and 18 inches square. The manufacturer states that it is completely automatic in operation and uses only air pressure and water for surging action, which combines with a special compound to rid cooling systems of rust, sludge and scale.

314

The Burd Piston Ring Co., Rockford, Ill., is introducing a new cylinder wall de-glazing tool. The Burd tool is said to be self-adjusting, and has no springs or gears to wear out. It will not grab or bind, adjusts itself automatically to the cylinder bore and need only be held in position for best results. The three blades always move outwardly to the cylinder wall and remain in perfect balance, regardless of size of bore.

315

The Hickock Electrical Instrument Co., Cleveland, Ohio, is marketing a new electrical service unit called the Autocheck. This 9-pound portable instrument checks battery condition, ignition coil, voltage regulator, and all electrical cables and connections. It is designed for testing the entire automobile electrical system,

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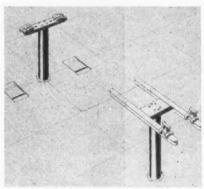
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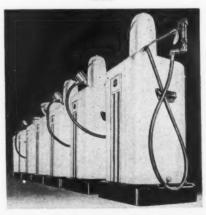
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316



317



FOR FURTHER INFORMATION USE COUPON ON PAGE 60

locating defective switches, wiring or other high resistance connections caused by dirt, wear, corrosion and so forth.

316

Rotary Lift Company, Memphis, Tennessee, announces production of a new surface type, two-post mechanic's lift which has been designed specifically for the small shop, or as an auxiliary lift in large shops. The lift is also said to be suitable for second story installation. The manufacturer states that wide range of vehicle sizes can be serviced on this mechanic's lift which is available in two capacities: 10,000 lbs. and 14,000 lbs. Rear axle supports travel a distance of 40 inches.

317

Gray Company, Inc., Minneapolis, Minn., announces a new line of automotive lubricating equipment, known as the Standard "600" Series. Both portable and stationary units comprise the group. Complete car and truck lube service is possible with the Graco Standard "600" Series, which includes air-operated and hand-operated units for chassis and gear lube; waste oil receivers; a vacuum cleaner; and a utility cleaner for parts and tools.

318

The Willard Storage Battery Company, Cleveland, Ohio, is marketing a new tester designed to







indicate the state of charge and the condition of the individual cells of a battery. In addition, it can be used to locate defective battery terminals and ground straps. This tester can show small variations in open circuit voltage because the scale on the dial has been expanded to cover only 1.2 volts.

319

The Binks Manufacturing Company of Chicago, Ill., has introduced the DP portable paint spray unit. One full horsepower paint spraying performance is claimed for this new 1/3 h.p. unit. The DP (meaning Direct-drive Piston) was designed specifically for spray painting, where low air pressure and large volume is important. The DP portable paint spray delivers 40 pounds working pressure and ample volume to operate Binks standard spray guns. It plugs into any 110-120 v. A.C. line.

320

The H. C. Schildmeier Company, Indianapolis, Indiana, is placing on the market a combination wheel balancer. The combination model is said to handle all car, truck and bus wheels, with or without drum assembly. With the wheel vertically mounted, it takes both static and dynamic balance. On the Seal Line balancer, instruments measure out-of-balance electrically, in ounces. The instrument panel shows where to put weights and how much weight to apply.

321

The Homestead Valve Manufacturing Co., Coraopolis, Pa., announces a new Hypressure Jenny steam cleaner. The unit develops 80-120 pounds working pressure; and its normal 45 gallon per hour capacity can be stepped up to 240 gallons per hour by means of an Adjusta-Blast Gun, a simple accessory which is optional at extra cost. Service Master Hypressure Jenny is said to have such features as instant starting, instant steaming, automatic nozzle control mechanism which permits operator to stop and start machine at the cleaning job, and selective compound and fuel feed to give best results for the individual job.

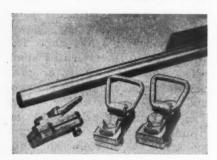
(Continued on page 60)

The Rockingham Machine Co., of Davenport, Iowa, are announcing an automobile body squaring

322

The Holcraft Corporation, Pasadena, Calif., is marketing Strech-Clamps, a new automobile door straightening set.

Holcraft Strech-Clamps are designed for use with present shop equipment, either hydraulic or mechanical. The complete set includes 3 separate Strech-Clamps and a re-



inforced alloy steel tube bar. Strech-Clamp jaws are heat treated, chrome moly forgings with machine cut teeth, and have parallel jaw adjustment. All parts are cadmium plated. Strech-Clamps are designed to simplify pulling curves to original contour.

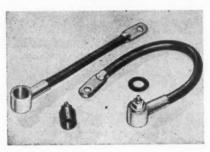
323

Herbrand Division, the Bingham-Herbrand Corp., Fremont, Ohio, announces a new tool that is said to speed up nut and screw turning jobs. At least four tools in one, the "Speedratchet" is claimed to function as a minimum clearance speeder, ratchet and ex-

tension, counterbalanced spinner, or as a combination ratchet Thandle with palm grip. It has a standard % inch reversible drive, and features fire resistant plastic handles.

324

Central Manufacturing Co., Ford City, Pa., is marketing the Lub-A-Cable, a non-corrosive battery cable. This cable comes in two parts, one being the cable itself with its two terminals and the other being the machined battery post cap. This cap is threaded both on the inside as well as the outside. The procedure is to use the machined cap to cut a thread on the post, then it is removed and the neoprene washer and the cable terminal placed over the post. When the cap is again screwed down, it simultaneously screws into the terminal, making



a tight connection. A grease fitting on top of the terminal makes it possible to keep it well lubricated at all times.

(ZONE)

(STATE)



machine. This machine is designed to square automobile bodies with no pressure against the floorboards and no strain on the car frame. The manufacturer states that it pushes misshaped bodies as well as pulls, and hoods can be brought into line and squared. All work is done with hydraulic jacks.

Tune-up Specifications

Ending and

326

Manning, Maxwell and Moore, Inc., Shaw-Box Crane and Hoist Division, Muskegon, Mich., announces a new device designed to tip loads of any kind after they have been lifted, and to hold them in any desired position. In operation, the load is lifted by whatever means are already in use and then the load is tipped to any desired position and held there by turning the self-locking worm which actuates a pocket wheel similar to that in a chain block with a wrench. Designed for



many uses, this unit can be used by automotive repairmen for tilting engines to the best position when making an engine change.

(Continued on page 126)

MAIL THIS COUPON:

For further information on any of the products mentioned in Motor Age write the code number of the product in the space provided below. Don't forget your name and address.

Frank P. Tighe MOTOR AGE

Chestnut & 56th Sts., Philadelphia 39, Pa.

(STREET & NO.)

Code number of New Products

Your Name Your Title

(CITY)

Specifications Current Engine and Tune-up

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	Spark Plug			AC-48	AC-48	AC-46-5	AL-AR-5 AL-AR-5 AL-AR-5	AL-ANTE	AL-AR-5	AL-AR-5	CH-H10	AL-A5	CH-17 CH-H10	AL-AB	CH-H10	CH-H10	AL-A5	866 844	333	AL-ARS	AC-45 AC-45	CH-J7	AL-A7-F	
		Compression Pressure at Cranking Speed (Lbs.)			120	110	888		135	135	110	120	119	120	110	115	120	136		135	191(f) 189(f)	105	110	in., M 125 in. wer F
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		Maximum Brake Hp. at Specified R.P.M. (with Bare Engine)			160-3800	90-3300	116-3600 135-3400 135-3400	26.5-5400*	112-3600	103-3600	95-3300	112-3600	121 4000	(d)-3600	152-3600	110-3600	82-3800 112-3400	105-3400 135-3600 135-3600	135-3600 150-3600 160-3600	97-3600	93-3400	80 4000 94-3600	72-4000	(a)—Models 61 and 62—126 in., Model 60—133 in. for 9EL model; 125 in. for Cosmopolitas model; 125 in. for (c)—Upper Ring Yr in., Lower Ring 1869 in.
ENGINE		Piston Displacement (Cu. In.)			331.0	216.5		44.0	236.6	230.2	225.8	226.2	262.0	228.2	336.7	255.4	172.6	257.1 303.7 303.7	288.0 327.0	217.8	239.2	169.6	148.5	Models 60—13 21 in. Cosmo pper 1860 i
EN		Taxable Hp.			8.8	29.4	333.3	10.0			32.5		30.4	28				825.5	39.5	25.3	33.8	26.3		(e) (-) (-) (-) (-) (-) (-) (-) (-) (-) (-
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					Cadillac	Chevrolet	Chrysler Chrysler Chrysler	Crosley	De Soto	Dodge	Ford	Frazer	Hudson	Kalanr	Lincoln	Mercury	Nash	Oldsm	Packard Packard Packard	Pivmos	Pontiac	Studebaker	Willys	- Wit

MOTOR AGE, June, 1949

61

NEWSCENE

Atlanta

The Southeast Automotive Show exhibited the products of 229 manufacturers and suppliers to approximately 10,000 wholesalers and retailers. The consensus was that although considerable selling took place during the five-day show, that money is not as free as it has been and lower priced lines are selling faster than more expensive lines.

Production

The strike at the Ford Motor Co. and a rash of smaller disputes in the automobile industry have effectively ruined the industry's chances of surpassing the all-time record for second quarter production established in 1929. Until labor trouble intervened, chances for smashing the record for three months' production which had stood for 20 years were very bright.

Upturn?

There is no question in anyone's mind now that the normal Spring upturn in car sales has been substantial. Evidence continues on all sides that sales are booming. Early in May, Kaiser-Frazer put into effect a 30 per cent upward revision of schedules and resumed operations of its second final assembly line. The company reported that sales were double the level prevailing a month earlier. Despite a 5day shutdown due to the shortage of brakes the company was expecting a production of more than 9000 units in May. Nash deliveries in April rose to a 20-year high for that month and the line of sales was expected to be even higher in May. Oldsmobile reports that sales for the first 4 months of this year were 26.4 per cent greater than in the same period of last year. Studebaker has hit an all-time sales record and continues in a very strong position. Other companies all report high sales and the question now is how long the current boom will continue. There is some belief that sales may taper off shortly in July or August and others indicate that they are expecting the rush to last well into the Fall.

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Pontiac

Pontiac plans no major changes in next year's models, according to Harry J. Klingler, vice-president of GM and general manager of the Pontiac Div. His statement indicates any major chassis changes such as higher compression engines will be put over until 1951 models. Pontiac production currently is running between 1400-1500 units a day and only the shortage of materials is keeping the division from producing the 2250 a day for which it is tooled.

A.E.R.A.

The 27th Annual Convention of the Automotive Engine Rebuilders Association was held in Baltimore, Md., from May 19 to May 21. 72 manufacturers had conference booths and, according to R. G. Patterson, executive vice-president, attendance ran in excess of last year's record of 1000.

Many technical as well as administrative subjects were covered during the three day meeting, and additions to the advertising program laid out last year, were announced.

The general attitude toward the outlook for the coming year was one of optimism, although it was agreed that the change to a buyers' market has become evident.

The driver is Ralph Mulford and beside him sits Len Zengel. In 1910 Len, now a Chrysler-Plymouth dealer in Bryn Mawr, Pa., beat Mulford by 7 seconds to win the Fairmount Park 200 mile Road Race, but in a revival race run in conjunction with the 1949 Philadelphia Auto Show, Ralph finally turned the tables and captured the Tidewater Trophy for the closest estimated time run. Ralph missed by 2 seconds in an eight mile run, without the help of watch or speedometer.



Chrysler

Chrysler Corporation has reported net earnings of more than \$18.7 million for the first three months of 1949. Profit represents 4.7 per cent of sales as compared with 4.4 per cent for the same period of 1948 when net profit was \$14.921. Unit sales for passenger cars and trucks in U. S. plants during the three months' period totaled 24,104, compared with 228,-256 for the first quarter of 1948.

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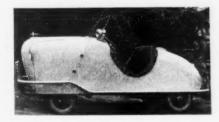
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949

Sun Electric Corp. has just opened a new branch and technical training center in Detroit representing an investment of several hundred thousand dollars. The company spent more than \$200,000 for completely renovating and remodeling its building, and in addition has acquired adjacent property for parking. The Detroit establishment brings to six the number of training centers operated by the company and several others are nearing completion. The purpose of the centers is to train operators in the company's nation-wide program of diagnosis of automobile engines and electrical equipment.

Imp

International Motor Products Co., Glendale, Calif., has announced a new small car, the "Imp." The car has a 63 in. wheelbase, is 120 in. overall, with a tubular steel frame. A one piece laminated glass body is mounted inside the frame. The car is powered by a 7 hp Gladden motor. There is 9



cu ft of storage space under the hood. Weight of the car is 475 lbs. Company officials claim the three-passenger car will do 80 mpg at 35 mph. The car is to be manufactured in Burbank, Calif., in a former Lockheed Aircraft Corp. plant. Preliminary production will commence about Aug. 1 on a 10-a-day schedule.



The Del Mar Convertible.

Del Mar

Del Mar Motors, Inc., San Diego, Calif., announces a new economy car, called the Del Mar. Constructed of standard parts, this new entry into the automotive market is expected to sell for approximately \$1,170 FOB San Diego.

The Del Mar has a 49 hp Continental engine, mounted in front, which is said to be capable of driving the car up to 80 miles per hour. At the maximum efficiency speed, which is 45 to 50 miles per hour, the fuel consumption is estimated at 30 miles per gallon.

The wheelbase of the Del Mar is 100 inches, and the tread is 58 inches. The manufacturer also points out that the road clearance is 8 inches, a factor which is claimed to give it safety at high speeds and roadability wherever standard cars can travel. The convertible model has a front seat width of 60 inches:

This car has only four grease fittings, which take care of the entire lubrication of the chassis. The entire car is mounted on rubber with the engine on four point suspension. The body will be made in color impregnated plastic, aluminum, and steel.

Keller

Latest automobile stock financing venture is a registration statement filed by Keller Motors Corp. of Huntsville, Ala., proposing sale of 5 million shares of common stock at \$1 a share.

N.A.D.A.

The next convention of NADA is to be held in Atlantic City, N. J., beginning Feb. 5, 1950. The program committee has announced that four clinics will be held. The topics will be announced later.

Auto Show

The 1949 Philadelphia Auto Show will open at Commercial Museum for a seven day run beginning June 11th. Philadelphia Automotive Trade Association is the sponsoring organization, and M. J. Duryea the show manager.

Both the local dealers and the car factories are spending considerable money, and the floor will hold well over \$1 million of exhibits. Most of the factories are shipping in special attractions as crowd catchers.

The National Antique Automobile Show, sponsored by the Antique Automobile Club of America, the Veteran Motor Car Club, and the Horseless Carriage Club, will be held in conjunction with the new car showing and should be a powerful drawing card.

The usual advertising media—posters, cards, mail pieces, newspapers, radio, and television—are being employed, and publicity, largely because of the antique cartie-in, is widespread in the area.

This show should certainly be a test of the possibility of arousing public interest by new car shows, at least in the Middle Atlantic region.

SHOP KINKS



FOR THE BEST KINK PUBLISHED EACH MONTH



FOR ALL KINKS
PUBLISHED EACH MONTH

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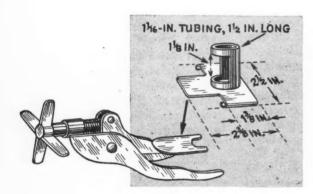
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Have you figured out a short cut for doing a job, devised a special tool to make a job easier, or developed any other helpful idea? Your Shop Kink may be worth five, possibly 25 bucks. Write it or draw it—just make it plain, not fancy—and send it to Motor Age. Of course, we don't accept anything previously published.

REST KINK OF THE MONTH



Removing Cadillac Valves with a Modified Valve Lifter

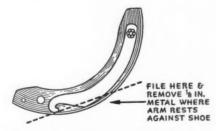
A piece of 1-1/16 in. tubing cut according to the diagram and welded on to a piece of metal, when slid over the prongs of a well-known make valve lifter held upside down, makes the removal of Cadillac valves easy. With some modifications this idea could be adapted for use on most makes of valve lifters. Put tension on the lifter and tap the head of the valve with a hammer. The valve keys fall into the hollow in the bottom of the tubing. To replace valve keepers use key inserter through opening in tubing. Martin Forsman, Bernitt Motors, Melbourne, Florida.

An Easy Method for Installing Studs

Here is an idea for replacing stud bolts in the motor. Just use a crown nut and a steel ball. Insert the ball in the nut and pull the stud down tight. The nut will back off easily. Herman B. Mertz, 1408 Rutherford Avenue, Pittsburgh, Pa.

Modifying Emergency Brake Shoe Arm After Relining

After relining rear wheel brake shoes on Chevrolets I find it impossible to replace the brake drums on most of them if the lining is slightly oversize, even if the adjustments are screwed in all the way and the emergency cable disconnected. This trouble can be en-



tirely overcome by filing emergency brake shoe arm as indicated in sketch. Alèx B. Morrison, McGowan and Morrison, Cheltenham Garage, 304-306 Ryers Avenue, Cheltenham, Penna.

Timing Light Used to Spot Leaks Around Moving Parts

Here is a real time saving shop kink when looking for oil leaks around moving parts—such as crankshafts, camshafts, distributors, etc.

Connect a daylight timing light and simply run engine at a fast idle, directing light on part you think is leaking. The timing light stops rotation of part, thereby allowing mechanic to see oil actually leak. Bert O. Wallis, Service Mgr., Signal Motors, Inc., 704 Sunrise Highway, Rockville Centre, New York.

Rebuilding a 1941

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Chevrolet Master Cylinder

When rebuilding a master cylinder on a 1941 Chevrolet, it is necessary to remove the complete cylinder, clutch, and brake pedal. Here is a short cut which I find very satisfactory and a great time saver, especially on an emergency job.

Remove the brake line from the rear of the cylinder, then, using a large socket, unscrew the nut or plug from the end of the cylinder. The valve, spring, and secondary rubber can then be easily removed. Next, take a 1/8 steel welding rod or stiff wire, and by inserting it in the front end through the steel washer around the piston push rod, the piston can be forced out the rear end of the cylinder without difficulty. After cleaning the cylinder you can proceed with installing new parts.

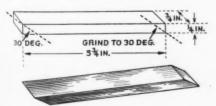
After rebuilding or replacing any master cylinder, bleed the cylinder before hooking up any brake lines. A few short pumps on the brake pedal will force out the air, and in most cases, it is unnecessary to bleed any of the wheels after connecting the lines.

I hope these short cuts prove to be as helpful to other mechanics as they have been to me. Franklin B. Tucker, Rock Hall Garage, Rock Hall, Md.

Straightening Bent Hood

Hinge on 1941 Pontiac

I have discovered a simple solution to a problem that I have run across several times. 1941 Pontiac hood hinges give a lot of trouble when they become bent. When this happens the rear of the hood will cock up an inch or so and the rear corners will flare out. Lower the hood as far as possible and place a bar of iron shaped as shown in the illustration between

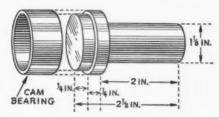


the two rivets in the hinge linkage that move together as the hood is raised. Then raise the hood as far as it will go against this bar. The hinge will regain its original shape and after a few tries the hood will close properly.

If the hinge is badly bent or twisted it may have to be replaced, but if a new one is not available the old one may be straightened as near as possible to the original shape, installed on the car, and then lined up with the bar of iron until it fits properly. Glenn Zink, 703 W. Perry St., Aberdeen, Washington.

Short Cut For Replacing Cadillac Camshaft Bearings

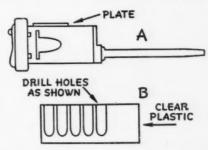
Low oil pressure at slow and idling speeds on Cadillacs '36 to '48 inclusive and La Salles '37 to '40 inclusive is caused by worn cam shaft bearings. It is essential to replace all cam bearings to get new car oil pressure. If the crankshaft mikes O.K. (which they usually do), all motor bearings may be re-



newed without removing the motor and having the block bored, etc. I have made a tool to replace the hard to get at rear cam bearing. Calipers are close enough for this job. Procure new cam bearing from the dealer (these are finished bearings). The neck gives room for a finger hold and is short enough to work a medium hammer to tap the bearing into place. It is well balanced and the bearing will not need scraping after installation. To remove the old rear cam bearing, procure a keyhole type metal saw (many types and kinds are available at Auto Supply houses for about 25¢ with blade). Saw through bearing in one place then pry out with a large screwdriver. Al Ruedy, c/o United Auto Service Co., 2300 Webster Street, Oakland 12, California.

A Time Saver in Removing Broken Keys from Locks

A key broken beyond the two forward tumblers is there to stay. If this happens on Chrysler product door locks, pry the plate from the top of the cylinder. Exercise care in this operation as it is pre-

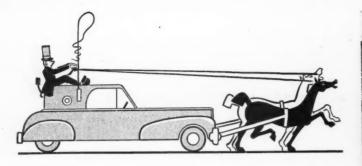


cision fit, and must be snapped back on. Keep the tumbler in an upright position and remove the five tension springs. These springs are all the same size so it is not important that they go back in their respective places. Simply place a piece of plastic, drilled as shown, over the cylinder holes exposed by the removed plate. Take a firm grip on the plastic and cylinder and turn upsidedown transferring the tumblers and spacers to the plastic. The broken key will fall out. Reverse the operation and the tumblers and spacers are in their right places back in the cylinder. This only takes a few seconds and the customer is made happy by maintaining same combination in door and ignition key.

This idea keeps the mechanic from accidentally mixing up these small tumblers. If this ever happens and you are not an experienced locksmith, you are out of luck. This article pertains to Chrysler products locks. To make this little gadget I removed the cylinder from the housing, sawed the bottom out of used housing as a guide to drill the plastic. Gene Miller, Glover Motor Company, 515-613 Richmond Avenue, Ottumwa, Iowa.

Substituting Heavy Cord For Transmission Gaskets

In a good many cars you cannot get a gasket for the back plate of a rear or top cover gasket for a transmission. So if you put all your cap screws in place, draw them up within an eighth of an inch, then take a piece of heavy twine or soft cord and rap it around all the cap screws and then send them home, you will have a perfect gasket. Clifton Creech, Collinson's Garage, 44-46 Washington Street, W. Orange, N. J.



From far and near come requests for special bodies to be built in this famous old shop

by Arthur H. Nellen, Jr.
Assistant Editor



Fig. 1. The interior of a Cadillac designed for His Holiness, Pope Pius XII. The folding seat is for his secretary.

CUSTOM BODIES for the Carriage

N addition to being a DeSoto-Plymouth agency, the Derham Body Co. of Rosemont, Pa., is now one of the foremost custom body building shops in the United States. The organization, founded as a carriage shop in 1887, is now directed by the founder's sons, James P. Derham, president, and Enos J. Derham, vice-president.

Among the many interesting jobs which the company has completed recently, one is certainly unique. In the spring of 1910 a well-to-do

young lady entered the Derham office and ordered a special carriage-type body to be installed on an automobile chassis. She requested luxurious styling with plush upholstery and lavish decoration. The job was done to her specifications, and as years went by and automobiles improved, she would have the carriage-style body transferred to new and improved chassis. In 1938, after having been transplanted about eight times, the body was scheduled for major repairs and installation on a new chassis once more

Fig. 6. A car designed for an invalid. Note the increased roof height to accommodate a wheel chair.

Fig. 7. The invalid's wheel chair and the ramp which makes it possible to roll the chair in.

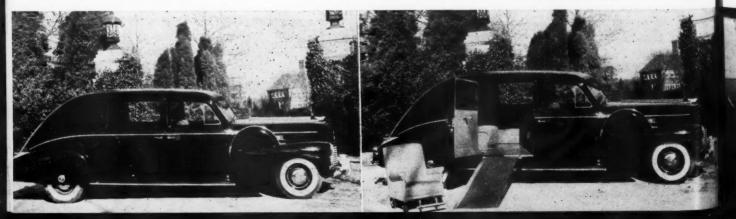




Fig. 2. This is the interior of a custom built sport car. Note the aircraft cockpit styling. The roof is Plexiglass.



and, if the unchanging owner were to consent, possibly some modernistic face-lifting. Modernization? Out of the question! This time she wanted a new body on a new chassis, but the unusual part of her request was that the styling must retain its original lines; it must be an exact replica of the original job. Derham's customers (Continued on page 104)

Fig. 8. The interior of the car in Fig. 7, showing how the chair is positioned and locked in place.



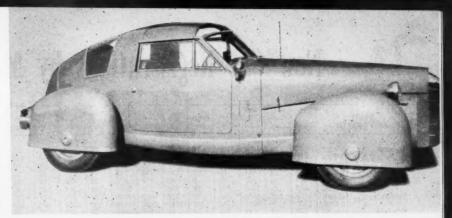


Fig. 3. The same car as shown at the left. The body is made of aluminum, and the engine and chassis are Mercury.

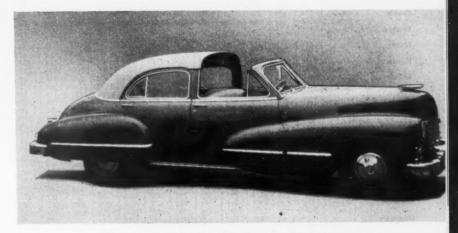


Fig. 4. One of Derham's custom roofs. The construction is cloth over metal.

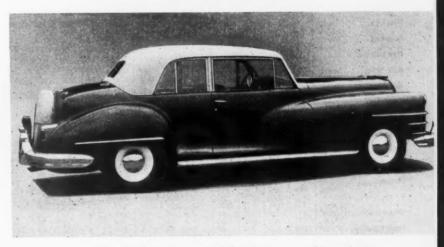


Fig. 5. This car was modified for a man who couldn't make his mind up between Chrysler and Lincoln.

Fig. 9. This car was built for Raymond Loewy, the automobile designer. Fundamentally it's a Lincoln Continental.



New Car Registrations by Makes by States*

STATE AND MONTH	Buick	Cad- illac	Chev- rolet	Chrys- ler	Cros- ley	De Soto	Dodge	Ford	Frazer	Hud- son	Kaiser	Lin- coln	Mer- cury	Nash	Olds- mobile	Pack- ard	Ply- mouth	Pon- tiac	Stude- baker	Willys	All Others	Total
labama March 3 Mos. Irizona March	272 640 117	60 141 28	1209 2170 207	109 259 32	15 51 12	54 198 24	166 451 86	1099 2771 325	28 66 5	178 385 98	51 114 15	62 149 15	274 597 61	144 298 51	221 481 50	66 170 38	403 1060 115	223 507 97	185 423 117	22 82 12	3 15 6	4.84 11.02 1.50
3 Mos.	276 189	76 28	384 626	88 97	37	71 46	171	718 610	14 23	231 128	31 54	36 14	138	126 79	103 137	85 68	355 316	235 176	280 112	24 26	18	3.48
alifornia March	459 1957	71 568	1224 4536	188 641	10 79	124 724	311	1478 4362	103 78	309 953	174 151	60 220	185 1161	192 599	287 1345	156 488	765 1718	346 2186	232 1566	70	46 68	6.79
olorado March	5560 248	1311	8861 681	1745 185	230	1741	3194	11469 624	215 31	2702 298	411 37	654 49	2485 153	1491 106	3540 120	1246	6146 366	4748 217	3645 99	108 253 15	227	61.83
3 Mos.	749 587	154 143	1312 971	400 131	26 11	182 131	427 238	1662 681	60 11	713 164	92 32	127 42	360 177	254 188	354 330	244 130	884 481	438 490	267. 225	43	5 23	8,7
(3 Mos.	1360	401	1616 193	336 14	24	298	690 25	1606 215	29	375	65 12	121	389 33	429 21	784 73	281	1144	911	472 51	75	72	11,4
elaware March 3 Mes.	241	17 55	388	50	9	50	153	568	15	73	25	41	99	71	214	54	198	73 163	145	13	6	2.6
ist. of Col March 3 Mos.	207 579	82 203	454 856	58 174	5	53 142	94 445	421 1094	7 12	93 237	15 26	27 65	79 185	50 152	173 407	133	178 574	153 314	104 217	18	25	2,3 5,8
orlda	315 814	107 298	517 1284	108 306	31 99	69 225	179 604	814 2357	16 72	158 487	31 126	93 315	259 645	97 281	217 464	122 306	303 1037	174 395	124 387	43 136	15 44	3,7 10,6
eorgia	******		******																			
ahe	115 299	16 50	166 434	119	2	11 80	57 174	204 585	10 56	54 193	15 58	14 47	54 127	38 103	56 137	27 83	77 346	74 202	65 200	11 25	3 8	3,3
inois	2795 6299	662 1708	4955 9891	683 1867	140 277	628 1720	1376 4235	5724 12844	213 658	1237 2909	324 931	337 888	1044 2416	998 2158	1701 3239	754 1766	1669 6098	1709 3853	1052 2227	140	333 982	28,4 67,0
diana March	572 1870	140	1730 3433	139 503	50 129	170 470	290 1092	1562 4246	73 186	389 1122	116 290	62 183	253 646	269 660	530 1325	219 573	283 1649	568 1088	612 1280	53 155	14 38	8,0
wa March	455 1322	382 77 224	1535 3266	206 478	24 62	121 304	258 784	1689 4657	78 193	251 734	126 354	37 129	328 717	196 481	334 778	148 378	771 1877	361 785	249 623	29 61	43 100	7,3 18,3
ansas March	444 848	79 143	1272 1959	149 342	42 101	120 260	242 595	1439 2464	53 132	234 470	63 169	68 157	251 445	203	307 568	143 259	317 935	320 542	206 354	9 26	18 28	5,9
entucky March	256 879	38	959 2052	98 314	20	74 191	134 523	879 2516	25	109	43	35	115	103	216	99	339	261	127	39	10	3,9
oulsiana March	281 817	131 55	1154 2086	124 270	19	63 174	154	1178 2996	25 83 27 85	417 177	137 69	98 50	341 220	264 108	608 206	254 110	1047 407	514 305	384 204	124 30	31 8	10,9
aine	164	169 42	424	50 121	55 8	46	499 119	346	10	475 81	188	141	503 66	318 73	465 109	241	1020	590 193	486 68	94	30 2	11,0
laryland	403	103 81	1170	132	21 15	116 137	344 171	820 1054	28 26	204 304	62 61	41 58	137 180	145 187	272 300	91 176	587 515	368 331	173 281	38 37	12	5,6
lassachusetts 3 Mos.	1160 1170	231 228	2378 1881	355 320	50 36	330 301	663 558	2535 1839	56 27	663 309	119 89	145 105	393 400	414 427	779 885	351 265	1616 1222	714 953	593 405	82 65	28 29	13,0
lichigan	2907 2415	605 538	3579 6188	824 591	102 44	791 607	1707 980	4318 6098	70 119	727 692	182 195	251 158	890 909	982 670	2184 1765	575 400	2786 2652	1958 2420	984	138 81	96 29	26,6
linnesota March	6807 447	1795 98	12169 1542	1293 228	124	1280 131	2627 290	16398 12 5 2	292 61	1956 248	438 122	483 29	2237 224	1761 256	4412 390	1008	5582 877	4259 395	1395 333	225 28	87	66,6
3 Mos. lississippl March	1329 213	308	3208 680	560 96	16 13	315 48	894 93	3581 699	180 20	649 130	281 36	120 40	484 145	635 94	934 130	444 54	2179 400	877 209	840 115	77 29	16	17,9
3 Mos.	652 588	123 136	1546 2073	241 213	40 39	151 223	319 353	1924 1933	51 28	339 259	101	115 74	339 312	238 265	310 451	157 173	918 621	464 480	284	83 43	29 18	8,4
3 Mos.	1621 115	383 25	4411 281	547 63	95	528 40	1186 105	4761 325	101	604 106	220 29	187 29	663 72	567 69	1068	408 40	2024	1080	595	93 16	47	21,
(3 Mos.	331 295	79	722	149	6	100	309	962	69	306	79	66	206	171	211	134	496	70 211	77 253	33	10	4,5
lebraeka March 3 Mos.	754	120	879 1770	127 332	10 27	144	126 406	1004 2545	90	105 259	50 135	25 83	137 324	78 201	162 404	67 164	443 1198	233 494	150 371	16 43	7 22	9,8
levada March 3 Mos.	39 86	14 27	68 150	26 54		18 38	12 33	72 183	8	19 52	7	27	30 57	11 22	28 62	15 32	133	35 83	29 82	3	1	1,1
lew Hampshire. March 3 Mos.																						
lew Jersey March 3 Mos.	1301 3819	276 887	2057 4045	320 1163	81 183	275 901	392 2156	1813 4766	35 98	518 1368	72 187	106 350	1088	384 968	711	340 865	327 2737	1386 2756	458 1202	78 212	43 108	31,
lew Mexico March 3 Mos.	75 264	15 46	160 385	32 102	9 20	18 55	30 152	158 552	11 44	48 127	32	20 73	46 109	21 99	36 114	19 63	51 235	51 125	34 98	5 15	3	2,
lew York March 3 Mos.																						
orth Carolina. March 3 Mos.	508 1252	90 267	1483 2968	131 360	9 31	107 304	210 756	1767 4172	39 114	210 588	42 159	94 245	399 818	138 359	347 771	191 463	534 1606	479	258	41 144	20 69	17,
lorth Dakota March	101 215	7	288 672	34 122	2	29 100	61 188	391 975	26 63	48 118	27 92	11 30	51	36	50 114	29	99	962 68	658	1		1,
hio	2097	26 402	5761	772	99	692	1072	4536	136	857	322	182	130 867	90 793	1537	76 587	497 2729	159 1885	159 876	179	52	3, 26,
oklahoma	5845 272 700	1206 47	10807	1806 73	240 10	1488	2979 169	11534 852	361 16	2319	670 21	484 47	2009 140	1923 102	3847 185	1400 70	6064 96	3394 213	2082 119	480	151	61,
regon	376	70	946	125	12	124	491 224	2099 840	45 29	293 167	56 57	110 57	339 204	233 164	463 232	182	723 271	530 295	267 285	35	15	9,
ennsylvania March	959 1968	175 377	1719 4228	289 608	39 42	283 511	593 958	2011 3955	78 155	407 763	139 226 554 14	138 228	435 819	360 807	570 1439	285 703	1074 1328	667 1596	617 1033	140	107	11,
thode Island March	5972 139	1175	9241 302	2070	140	1664 29	3780 100	9929 249	352	2079 53	554 14	639	1999	2112	3838 124	1787 30	6543 109	3215	2597 72	381	31 79 2	60,
outh Carolina. March	437 233	126 46	651 888	145	14	110 50	293 120	670 827	18	149 102	29 17	48	135 180	151	363 161	78 70	415 312	291 195	212 106	27 27 67	12 28	4,
outh Dakota March	581 128	133	1676 284	184	26	164 31	344 75	2254 354	24 42	310 70	47 48	109	389 59	254 51	392 70	163	828 95	464	277		57	8,
3 Mos.	295	40	611	123	6	76	204	813	103	163	115	72	155	113	159	65 136	415	78 182	73 172	19	5	3,
3 Mos.	1005	000	2100	200		100	700	2400														
exas	1085 3409	209 753	3192 7652	366 1301	58 225	199 841	729 2595	3480 10140	63 301	520 1788	132 453	212 821	715 2093	368 984	690 2063	247 776	631 3812	806 2081	1419	340	86 282	14,
tah	162 337	25 59	289 526	121	6 26 8	23 84	101 235	356 792	17 36 10	197 345	43 79	18 37	67 147	76 143	73 157	40 95	123 383	108 206	87 181	13	1	4
fermont March 3 Mos.	218 342	23 41	263 433	45 74	23	50 87	127 216	118 358	18	75 122	51 67	11 22	53 73	107 150	228 294	50 78	180 316	111	84	13 26	15 21	3
irginia March	483 1579	100 287	1433 3047	130 501	35 84	98 383	199 930	1618 4604	130	267 745	72 226	68 192	285 756	200 511	360 959	141 425	470 1949	371 1033	230	54	27 97	19
Vashington March 3 Mos.	442 1217	116 243	1126 2181	173 404	22	175 416	382 846	1194 2820	39 96	231 522	56 145	42 98	179 417	226 512	362	124 281	438 1503	437 832	397	30	40 101	6
Vest Virginia March	193 554	29	629 1222	100	35 7 22	57 161	96 389	507 1347	22 58	86	21 85	34 87	128 278	113	149	85	368 898	129	113	28	5	2 7
Wisconsin March 3 Mos.	763 2057	135	1637 4022	214	24 65	202 584	369	1395 4094	79	336	127	60	230	550	542	195	389	595	338	42	16	8
Vyoming March	95	19	169	55	1	26	1393	216	241	894 42	379 21	196 21	31	1729	57	494 35	2096 102	1253	39	6	1	23
\3 Mos.	228 25384	5422	364 62505		1072	6752	117	61137	1799	11483	3224	2953	11932	9680	17677	7146	255 23846	21698	12493	1748	1071	310
Total March, 1948	20036	2883	56507	7476	1628	5406	15221	35684	4008	9153	6698	873		8526		4459	24812	19758				259
Total 3 Mos., 1949	76357	17239		2 24032	3110	19976	48633	16911	0 5498	32766												

^{*} Data from R. L. Polk & Co

STUDEBAKER

Adopts Borg-Warner Automatic Transmission

HE Detroit Gear Division, Borg-Warner Corporation, in collaboration with the Long and Borg & Beck Divisions has developed a three speed automatic transmission combined with torque converter for passenger cars. As announced recently by Studebaker, this transmission has been adopted by Studebaker for use in models to be released for

Teal

1,107 3,328 4,744 67,039 8,034 17,316 18,305 11,168 11,168 11,514 26,656 8,134 8,645 8,645 8,645 11,189 4,943 4,944 4,943 4,943 4,944 4,943 4,943 4,943 4,943 4,943 4,943 4,943 4,943 4,943 4,943 4,94

11,390 31,857 843 2,713 7,097 7,096 1,417 3,834 81,393 1,019 1,011 11,915 10,128 11,011 11,915 10,128 13,374 4,374 4,374 4,374 4,374 4,374 4,374 4,374 4,374 4,374 4,374 4,374

4,364 4,129 1,865 4,003 1,822 3,069 6,750 9,290 6,231 4,506 2,894 7,156 8,238 3,473 1,068 2,363

0,121 9,449

149

use in models to be released for production later this year.

The torque converter comes into play with first gear, second and reverse gear. Direct drive is obtained through an hydraulically operated friction clutch which completely bypasses the torque converter, thereby eliminating fluid slippage and frictional losses of the transmission gearing. This type of planetary transmission provides a fluid start with locked up direct drive.

The ratios obtainable in the gear box plus torque converter give complete coverage ranging from maximum low gear performance through intermediate gear requirements blending into direct drive with low engine speed for cruising range. Performance is considered equivalent to a conventional three speed transmission plus overdrive. A passing gear is obtainable at the will of the driver, as is a coasting gear for engine braking for descending grades.

Full throttle acceleration is available in direct drive at very low car speeds. This feature is desirable, particularly in traffic operation, since shifting and engine speed-up noise are eliminated. Direct drive offers very low engine speeds due to the lower axle ratio used with this unit.

The maneuver between low and reverse for "Rocking" the car can be made rapidly by moving the control lever quickly from low to reverse. This is feasible because only a valve is moved during the operation.

At the option of the car manufacturer this transmission can be arranged to start either in low or in second gear. In either case the progression to higher ratios is fully automatic

Available at first on the Commander, this torque converter is used with the lower gears, while high gear brings the car into direct drive

and said to be scarcely perceptible.

When arranged to start in second gear, low is used as an emergency gear and when the manual shift lever is moved to this position the transmission will remain in low gear. This gear is used for pulling heavy loads, and ascending or descending steep grades.

The automatic shifting range varies with the position of the accelerator pedal. With light throttle the shifts progress at medium car speed while with more throttle the shifts progress at higher car speeds.

A kick down from direct drive position is provided for added acceleration. This kick down position is a resistance under the accelerator pedal which is felt by the driver. When the throttle overcomes this resistance a down shift is effected automatically into second gear. If this throttle position is maintained, automatic upshift into direct drive takes place at 60 MPH. The driver has complete control of this down shift or passing gear up to 50 MPH.

The control system is of simple design. Shift speeds are said to be uniform under all conditions. This is assured by the action of a mechanical governor which is not affected by temperature changes. Also no timed nor overlapped shifts are used, thereby eliminating any effects from oil temperature and viscosity change.

The manual shift lever has five positions as follows:

"P"-Park position.

This is a mechanical lock for parking the car on any grade. It is positive in action and easily released.

(Continued on page 116)



MOTOR AGE FLAT RATE AND SERVICE MANUAL DEPARTMENT

Repair shops can put desludging on their list of profitable jobs by offering it to customers at a price such as is suggested in this article



Andrew D. Grey
Editor, Motor Age Flat Rate and Service Manual

Desludging An Engine On a FLAT RATE Basis

ANY of the major oil companies have in recent years been carrying on an intensive advertising campaign designed to educate the motoring public, particularly in regards to sludge formation in the crankcase.

As a natural result of this, many motorists are very conscious of the fact that sludge forms in their crankcase and are perfectly willing to pay a reasonable fee to have it removed and thus keep the internal working parts of their engine in a much cleaner condition and subject to less wear and less etching from acid formation.

It is a wise move on the part of the shop owner to take advantage of this advertising, which is aimed at the motoring public, and put on a special job of sludge removal on a flat rate basis.

It is no longer necessary to explain to the owner the desirability of having the sludge removed from his crankcase, he is already sold on the job but he might perhaps hesitate to approach the shop and ask to have the job done. Therefore, it behooves the average shop to put on a campaign designed to sell an internal engine clean-up in their territory. The work can be done readily on a flat rate basis.

To secure the proper flat rate charge simply turn to your Motor Age Flat Rate & Service Manual and take Operation F13 plus Operation L11, to this should be added \$3.00 for the actual desludging work.

The possibilities for additional work are simply endless. When cleaning out the valve chamber it would pay to take a feeler gage quickly and check the valve clearance. Also after the oil pan has been removed it is to the shop's advantage to check the bearings. It is a worthwhile service to the owner to report on the condition of his bearings and valves.

When the actual desludging operation is being performed pay particular attention to the rearmain bearing oil drain, the camshaft rear oil drain, and the connecting rod spit holes. The job-may be done using steam, chemical cleaning compounds, pressure, or by hand.

Desludging should start from the top or valvechamber and work down through the crankcase to the oil pan. Particular care should be given the oil pump inlet screen and the timing case. This Flat Rate operation provides a real serviceto the customer and a nice profit for the shop.

WOW! WHAT AN APRIL VOLUME STUDEBAKER DEALERS DID!

Following up the biggest single quarter in Studebaker history, Studebaker's U.S. dealers have just done the biggest single month's business they ever recorded!

More Studebaker cars and trucks were delivered to the public at retail in April 1949 than in any previous month in any previous year!

Studebaker's really rolling!

Current Passenger Car Price, Weight and Body Table

Following are prices at factory for cars with standard equipment as of May 7, 1949. State or local taxes, transportation and finance charges and optional equipment are extra.

BODY MAKE AND MODEL	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charges	Delivered Price at Factory including Federal Taxes	Shipping Weight	BODY MAKE AND MODEL	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charges	Delivered Price at Factory including Federal Taxes	Shipping Weight	BODY MAKE AND MODEL	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charges	Delivered Price at Factory including Federal Taxes	Shipping Weight	BODY MAKE AND MODEL	List Price at Factory without Federal Taxes	xes a	Delivered Price at Factory including Federal Taxes	Shipping Weight
Super 50 Sedanet Sedan, 4d. Conv. Coupe	1929 2023 2430	146 151 173	2075 2174 2603	3735 3835 3985	DE SOTO (Conti Sta. Wagon Carry-All Custom Club Coupe	2042	114	2156	3585 3645	MERCURY Coupe, 6p Spt. Sedan, 4d Convertible, 6p Sta. Wagon	1845 1895 2255 2545	134 136 155 171	1979 2031 2410 2716	3321 3386 3591 3626	PLYMOUTH (C Sedan, 2d Suburban DeLuxe-P18 Club Coupe	1740 1435 1465	ed) 100 84 86	1840 1519 1551	3105 3034 3059
Est. Wagon	3000 2450 2563 2960 3520	203 189 195 216 245	3203 2639 2758 3176 3765	4100 4115 4205 4370 4490	Sedan, 4d, 6p Convertible Sedan, 8p Suburban	2059 2443	115	2174 2578	3785	NASH 600 Super Sedan, 2d Brougham, 2d Sedan, 4d	1668 1690 1693	118 118 118	1786 1808 1811	2935 2960 2950	Sedan, 4d Spec. DeLP18 Club Coupe Sedan, 4d Conv. Cb. Cpe Sta. Wagon	1515 1540 1875 2245	88 89 107 127	1603 1629 1982 2372	3046 3079 3323 3341
ADILLAC Series 61 Club Coupe, 2d.	2640 2740	174 179	2814 2919	3880 3950	Wayfarer, D29 Coupe, 3p Roadster, 3p Sedan, 2d	1525 1635	86 92	1611 1727	3065 3130 3180	600 Sup. Spec. Sedan, 2d Brougham, 2d. Sedan, 4d	1703 1725 1728	121 121 121	1824 1846 1849	2935 2960 2950	PONTIAC Chieft6 Bus. Coupe	1492 1609	111	1603 1726	3185 3225
Tour. Sedan, 4d. Series 62 Club Coupe, 2d Tour. Sedan, 4d. Conv. Coupe, 2d	2810 2890	182 186 208	2919 2992 3076 3523	3910 3980 4230	Meadowb'k D30 Sedan, 4d Coronet D30 Club Coupe Sedan, 4d	1750 1812 1825	98 102 102	1848 1914 1927	3355 3325 3380	Sedan, 4d	1873 2029 2050 2054	127 141 141 141	2000 2170 2191 2198	2985 3365 3390 2385	Sedan, 2d Sedan, 4d DeL. Sed. Cpe DeL. Sed., 2d.	1609 1657 1699 1699	117 119 122 122 124	1726 1776 1821 1821	3245 3275 3230 3260
Series 60 Tour, Sedan, 4d. Series 75 Bus, Sedan, 9p. Tour, Sedan, 4d.	4405 4500	234 286 291	3859 4691 4791	4150 4665	Twn. Sedan Conv. Coupe Sta. Wagon Sedan, 7p	1905 2206	107 123	2012	3390	Sedan, 4d	2054 2074 2095 2099	141 144 144 144	2195 2218 2239 2243	3385 3365 3390 3385	DeL. Sed., 4d. DeL. Conv. Cpe. Streaml. 6 Sed. Coupe Sedan, 4d	1589 1637	138 116 118	1871 2153 1705 1755	3290 3485 3260 3270
Bus. Imp., 9p Sedan, 7p Imperial, 7p CHEVROLET	4585 4710 4900	295 301 311	4880 5011 5211	4685 4720	Six Bus. Coupe. Tudor. Fordor.	1236 1323 1368	97 102 104	1333 1425 1472	2871 2945 2990	Amb. Cust. Sedan, 2d Brougham Sedan, 4d	2189 2210 2214	149 149 149	2338 2359 2363	3400 3415 3415	DeL. Sed. Cpe DeL. Sedan, 4d. Sta. Wag. 6 Wood Metal	2400 2400	121 123 159 159	1800 1850 2559 2559	3270 3315 3680 3540
Styleline G.J Bus. Coupe Sedan, 2d Spt. Coupe Sedan, 4d	1260 1330 1335 1375	90 94 94 96	1350 1424 1429 1471	3000 3035 3010 3075	Custom 6 Tudor. Club Coupe. Fordor. Eight	1405 1405 1450	106 106 109	1511 1511 1559	2948 2928 2993	OLDSMOBILE Series 76-6 Club Coupe Club Sedan Twn. Sedan	1630 1655 1715	118 119 122	1748 1774 1837	3260 3290 3335	DeL. Wood DeL. Metal Chieft. 8 Bus. Coupe Sed. Coupe	2475 2475 1557 1674	163 163 114 120	2638 2638 1671 1794	3640 3490 3240 3280
Fl'tline GJ Gedan, 2d. Sedan, 4d. Styleline GK	1330 1375	94 96	1424 1471	3065 3085	Bus. Coupe	1318 1393 1438	102 106 108	1420 1499 1546	2911 2985 3030	SedanClub Cpe., DeL. Club Sed., DeL. Twn. Sed., DeL.	1725 1765 1790 1850	123 124 126 129	1848 1889 1916 1979	3340 3315 3355 3400	Sedan, 2d Sedan, 4d DeL. Sed. Cpe DeL. Sedan, 2d.	1674 1722 1764 1764	120 122 125 125	1794 1844 1889 1889	3315 3360 3300 3325
Sedan, 2d. Spt. Coupe Sedan, 4d. Conv. Coupe Sta.Wag.,Wood	1405 1420 1450 1750 2140	98 99 100 118 138	1519 1550 1868 2278	3085 3055 3125 3355 3500	Tudor. Club Coupe. Fordor. Conv. Coupe. Sta. Wagon.	1480 1485 1525 1820 2118	110 111 113 129 146	1590 1596 1638 1949 2264	2988 2968 3033 3274 3563	Sedan, DeL, Conv. Coupe Sta. Wag., DeL Series 88-8 Club Coupe	2025	130 139 176 139	1990 2164 2911 2164	3375 3580 3680 3550	DeL. Sedan, 4d. DeL. Conv. Cpe. Streami. 8 Sed. Coupe. Sedan, 4d.	1654 1702	127 141 119 122	1939 2221 1773 1824	338 356 331 338
Sta., Wag., Steel Fl'tline GK Sedan, 2d Sedan, 4d.	1405 1450	138 98 100	2278 1503	3450 3090 3115	FRAZER Sedan Manhattan	2264 2446	131 149	2395 2595	3455 3514	Club Sedan Twn. Sedan Sedan Club Cpe., DeL Club Sed., DeL	2050 2110 2120 2150 2175	141 144 145 145 147	2191 2254 2265 2295 2322	3585 3625 3615 3590 3615	DeL. Sed. Cpe. DeL. Sed., 4d. Sta. Wag. 8 Wood. Metal.	1744 1792 2465 2465	124 127 162 162	1868 1919 2627 2627	334 338 374 360
HRYSLER Royal 6 Club Coupe Sedan, 4d, 6p Sedan, 4d, 8p	2002 2021	112 113	2134	3531 3571	HUDSON Super 6 Coupe, 3p Brougham Club Coupe	2013	138 143 145		3460 3470 3480	Twn. Sed., DeL Sedan, DeL. Conv. Coupe Sta. Wag., DeL Series 98-8	. 2235 2245 2420	150 151 160 197	2385 2396 2580 3317	3665 3645 3845 3945	DeL. Wood DeL. Metai	2540 2540	166 166	2706 2706	369 355
Limousine, 8p. Sta. Wagen, 9p Windsor 6 Club Coupe	2186	122	2308		Sedan, 4d. Conv. Brghm. Commodore 6 Club Coupe.	2061 2623 2205	146 176 154	2207 2799 2359	3500 3550	Sedan Club Sed., DeL Sedan, DeL.	2450	157 161 161 165	2447 2521 2541 2615	3835 3890 3840 3925	Champ. Del Coupe, 3p Sedan, 2d Coupe, 5p	1482 1547 1572	106 110 111	1683	259 267 267
Sedan, 4d, 6p. Conv. Coupe. Sedan, 4d, 8p. Limousine. Saratoga 8	2206 2598	143	2741	3845	Super 8 Brougham Club Coupe	2768 2093 2138	154	2952 2245 2292		PACKARD Eight Club Sed., 2d.	2094	130	2224	3740	Sedan, 4d	1577 1552 1617 1642	112 110 114 115	1662 1731 1757	261 268 268
Club Coupe Sedan, 4d, 6p. New Yorker 8 Club Coupe Sedan, 4d, 8p.	2448 2473 2558 2583	137	2 2700	4103	Sedan, 4d	2141 2285 2308 2848	164	2472	3600	Tour. Sed., 4d. Sta. Sedan DeLuxe 8 Club Sed., 2d. Tour. Sed., 4d.	2118 3255 2221 2245	194	2358	3770	Sedan, 4d Convertible Commdr. Coupe, 3p Sedan, 2d	1647 1955 1792 1857	127	2086	286
Conv. Coupe. Twn. and Cty. Conv. Coupe. Crown Imp. Sedan, 4d, 8p	3039				KAISER Special Traveler	. 1869 . 1958	126	1995 2088	3345	Super 8 Club Sed., 2d. Tour. Sed., 4d. DeL. Cb. Sed.	2449 2473 2721	159 160 173	2608 2633 2894	3800 3870 3855	Coupe, 5p. Sedan, 4d. Com. Reg. DeL Coupe, 3p. Sedan, 2d.	1882 1887	132 132	2014 2019 2041	31:
CROSLEY Sedan, 2d						2350	169	2995	3959	DeL. Sedan, 7p DeL. Limous. Custom 8	3154 3724 3867	196 228 233	3350 3950 4100	4260 4600 4620	Coupe, 5p. Sedan, 4d. Land Cruis. Convertible.	1972 1997 2002 2180 2313	138 139 148	2135 2141 2328	316 321 321
Sta. Wagon		5		1110	Convertible Cosmopolitan Coupe	2910	208	3116	4224	Convert. Vict.	*3522				WILLYS Jeepster	1495			
De Luxe Club Coupe Sedan, 4d	1871 1881					3025 3025 3700	213	3238	4259	DeLuxe-P17	1295	76	1371	2825	Jeepster Sta. Wag., 4 cyl Sta. Wag., 6 cyl Sta. Wag., 6 cyl	l. 1595 l. 1695 l. 1745	119	1814	28

[•] Excluding Ultramatic transmission which is priced at \$225.



PLETE KING LINE

The King Line includes Pistons, Pins, Motor Bearings, Valves, Cylinder Sleeves, Water Pumps and Parts, Front End Parts and Shackles...all in one catalog from one jobber. That's real service!



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PISTONS . PINS . VALVES . BEARINGS . WATER PUMP PARTS BOLTS . BUSHINGS . SILENT-U SHACKLES . SLEEVES . WHEEL SUSPENSION PARTS

MOTOR AGE, June, 1949

Shinning Welahi

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2468 2587 2845

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Service Suggestions from the Factories

Water Leaks in Studebaker Land Cruiser Windows

Any water leaks that have originated at the front or rear door windows, window ventilator windows, or weather seals of 1947-48 Land Cruiser models may be corrected by one of the following procedures:

1. Ascertain exact location of leak or leaks by a lively spraying of water over all parts of the door glasses where water has entered.

2. (For leak at junction of window glass and ventilator.) If water enters car interior at junction of window glass and ventilator, align the window glass to the ventilator with the regulator adjusting nut. This adjusting nut can be reached by removing door trim panel. If further adjustment is necessary the window guide can be moved to right or left by means of slots provided in the door for this purpose, until a water tight seal is obtained.

3. (For leak between glass and rubber weather seal of vent assembly.) If water enters car interior between the glass and the rubber weather seal, shim out the weather seal with thin strips of rubber inserted beneath the weather seal at all points of leakage until a positive closure is made between the glass and weather seal. The further application of any good approved sealer around the outside edges of weather seal will give a finished neat appearance.

4. (Water leaks between ventilator assembly and door glass.) If, after all operations covered in corrections #2 and #3 have been performed and a leak is still evident, it may be caused by the misalignment of the vent assembly at the pivot, or the channel filling up with water and overflowing into the car.

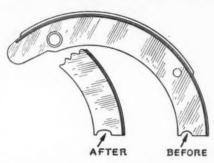
If this condition is prevalent, it will be necessary to replace the garnish moulding, vent, and the weather seal assembly.

Elimination of Squealing of Front Brake Shoes

To eliminate the squealing of the front brakes on the A-40 Austin, it is necessary to obtain a selfcentering action of the shoes. This can be achieved by the following modification.

Part of the shoe to be modified: The ½ in. dia. cut-away in the end of the shoe which is not acted upon directly by the expansion of the wheel cylinder and has its abutment on the peg securing the blank end of the opposite cylinder.

Modification: On both front shoes increase the above-men-



tioned cut-away by filing away 1/32 in. on both sides without increasing the depth—making an elongated cut-away.

Freeze Chewing Gum Off Upholstery

Here is a tip that may come in handy. To remove chewing gum from automobile seats and upholstery, apply a piece of dry ice, or if that is not available, an ice cube, to the gum for a short time. The gum will become brittle and can be

readily chipped off. Any residue that remains then can be taken off with naphtha or similar solvent and the nap brushed off to remove any ring left by the cleaner.

Factory Recommends Type 104 Spark Plugs for Cadillae

When replacing the normally recommended spark plugs on Cadillac engines, it is imperative that servicemen should use only type 104 spark plugs, which have a 5%" Hex.

It has been discovered that in some instances type "104—" (Note the dash) spark plugs with a 15/16" Hex have been installed in Cadillac engines. This "104—" spark plug was released for use on Chevrolet passenger cars and should not be used on Cadillac.

Improper Towing Practices May Damage Hydramatic

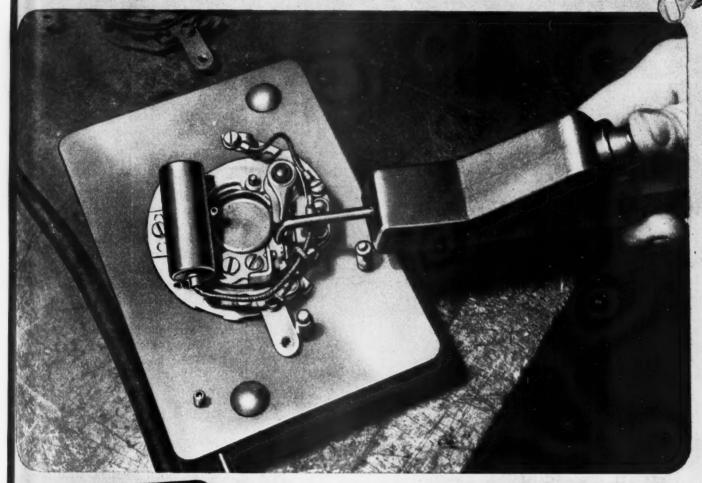
The factory recommends that, in the event of an emergency, where it is necessary to tow cars equipped with Hydramatic Drive and which have been driven less than 5,000 miles, they must never be towed without first disconnecting the propeller shaft or raising the rear wheels. This is of the utmost necessity because of possible close production limits between front clutch plates which might cause the front clutch to drag and probably burn up.

The normal seating of front clutch parts permits the towing of cars that have been driven more than 5,000 miles, provided, of course, that the transmission is known to be in good condition and also that the selector lever be in the neutral position.

Tested Quality

HELPS YOU

DELIVER AMERICA'S FINEST IGNITION SERVICE



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SERVICE PARTS

Operator is making high voltage check on breaker plate insulation and condenser to insure freedom from shorts and grounds.

You have a major investment in your established reputation and your regular customers. The simple truth is you cannot protect this investment with workmanship alone, no matter how expert . . . unless it is backed up by parts of

unfailing quality. Proof of the dependability Auto-Lite Original Factory Parts afford expert service men is proved by this fact: more than half of America's car makers specify Auto-Lite. For information, write to

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AW MATERIAL TESTS . . . all alerials must measure up to redetermined standards before by are released to production.



ENGINEERED SPECIFICATIONS... scientifically developed for every part. Nothing left to chance. High quality assures dependability.



CONTINUING IMPROVEMENTS...
by the foremost engineers working in one of America's great
engineering laboratories.



APPROVAL OF LEADING CAR, TRUCK, AND TRACTOR MAKERS
. . . as original equipment, after most searching tests by engineers.



FINISHED PRODUCTS TESTS . . . every component and assembly passes repeated tests, checked constantly with laboratory research.

Money cannot buy better automotive Electrical Equipment

Studebaker Front End Continued from Page 48

Under certain adverse conditions, when the car is generally driven over roads with high crowns, or when the weight distribution of the load carried is abnormally equal, the camber should be adjusted differently. Under these conditions it is advisable to adjust the camber of the left wheel ½ degree greater than

that of the right. This adjustment will compensate for the abnormal road crowns or unequal load distribution, and will contribute toward reduction in tire wear.

When making this adjustment, however, it is important to remember that the camber of the right front wheel must be within the specifications of ½ degree ± ¼ degree. Thus, if the right wheel adjustment results in a camber of 1/4 degree, it will be possible to set the left wheel camber to 34 degree, which is 1/2 degree greater.

CASTER

The caster angle on Studebaker cannot be changed from the factory setting, which is from 0 degrees to plus 1 degree. This angle is determined by the relation of the steering knuckle control arms to the frame. If caster is found to be out, check the king pin and its support for being centered in the control arm. Also examine for bent steering and suspension parts.

KING PIN INCLINATION

King pin inclination is determined by the design of the spindle, and therefore is not adjustable. Before checking this angle, be sure that the camber is correct. The specified angle of the king pin is 51/2 degrees with the car unloaded, in a level position and the tires at their proper pressure. Incorrect king pin inclination indicates that a spindle or some other part of the steering system is bent.

TOE IN

To check toe in, set the steering gear cam lever shaft on the center of the high spot of the cam. The steering wheel spokes should be in a horizontal position, with the front wheels straight ahead. If the spokes are not in a horizontal position when the shaft is on the center of the high spot of the cam, it is necessary to remove the steering wheel and place it on the correct serrations on the steering tube. Once the wheel position is correct, it should remain in this position throughout all the toe-in and steering linkage adjusting operations.

To set the left front wheel in its straight ahead position, use the following method. Attach a string to the rear bumper and draw it tightly across the outside of the tires in such a way that it hits below the hub caps. Tie the other end on the front bumper. Since the front wheel tread is wider than

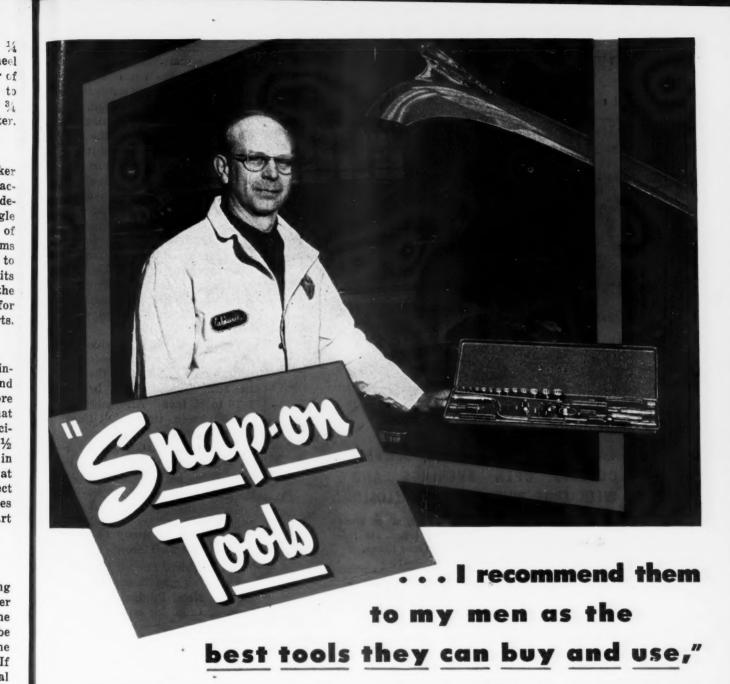
(Continued on page 78)

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says Jimmy Caldwell, Service Manager, Wiles-Johnson Motors, Inc., Indianapolis, Ind.

In well-known shops from coast to coast, you'll find Service Managers like Jim Caldwell, just about unanimous in their liking for Snap-on tools . . . and in their endorsement of Snap-on's direct-to-user tool service.

Expert mechanics themselves, they know from experience that a complete kit of Snap-on tools contributes to speed, good workmanship, and bigger pay envelopes. They know that every call of the Snap-on man helps keep tool kits up to par and eliminates wasteful "toolchasing" time.

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Snap-on's direct-to-user tool service is available through 40 direct factory branches and almost 800 trained field representatives.

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For 29 years, Snap-on's Nation-wide

Tool Service has proved to be

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Studebaker Front End Continued from Page 76

the rear wheel tread, it is necessary to compensate for the difference in tread (11/8 inches on the Champion, or 1/2 inch on the Commander) between the string and the front sidewall of the rear tire. The string should contact both the front and rear of the front tire. Make necessary adjustments on the left tie rod. Once the wheel is in its correct straight ahead position, the tie rod clamp should be tightened and not disturbed for the remainder of the procedure.

Correct steering linkage adjustment is made in the following manner. On the Champion, measure the distance from the grease fitting in the threaded bushing on the auxiliary (center) steering arm

to the center of the steering gear cam lever shaft. This measurement should equal the distance between the center of the ball studs at each end of the auxiliary tie rod. Make adjustments by loosening the clamps on both ends of the auxiliary tie rod and twisting it until the aforementioned measurements are equal. Then tighten the clamps.

On the Commander, measure the distance between the grease fittings on the two steering bell crank shafts. This measurement should be equal to the distance between the centers of the ball studs at each end of the auxiliary tie rod. Auxiliary tie rod adjustments are made in the same way as on the Champion.

Check toe-in on a reliable front end machine or with a toe-in gage. Adjustment is made on the right tie rod. Toe-in should be from 1/16 to 1/8 inch. After obtaining correct toe-in, tighten all tie rod clamps securely. On the Champion models, tighten all tie rod clamps so that bolts are horizontal and are on the bottom side of the tie rod.

A & P Sales Company To Distribute "Fort Steuben" Line So

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The complete line of steel bins and shelving manufactured by Fort Steuben Metal Products Co., Steubenville. Ohio, for automotive and commercial applications, will be sold and distributed nationally by Automotive Engineered Products Sales Co., 319 Stephenson Bldg., Detroit 2, Mich., according to arrangements recently completed between principals of the manufacturing and sales organizations involved.

In the automotive field the line also includes special racks for springs, muffler and tail pipe assemblies, molding and fenders, etc.

Sales offices have already been established in Chicago, Cleveland. Logansport, Ind., York. Omaha, Milwaukee, Los Angeles, Louisville and Buffalo in addition to the main office in Detroit. In addition offices will be added in Atlanta, Boston, Philadelphia, Dallas or Houston, Minneapolis, Denver, Kansas City or St. Louis, Charlotte and Portland or Seattle.



MR. JOBBER: KEEP YOUR SERVICE OUTLETS **EVENINGS** WEEK ENDS WHEN YOU ARE CLOSED

The motorist is busy driving evenings, week ends and holidays when you must be closed. He frequently needs fuel pump service at these times.

Protect your volume by enabling your service station customers to take care of that business at any time. See that they have Autopulse's 3-in-1 Counter Display Kit. Just three pumps, but they assure service for any car on the road. It's a smashing sales success wherever you introduce it.





Your customers who own Plymouth, Dodge, De Soto, or Chrysler vehicles will thank you for using MoPar Cyclebond Brake Lining on their cars.

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Lasts up to 75% longer! Bonded to the brake shoe by a special process. No rivets! Serviceable through practically its entire thickness.

Steps up braking efficiency! Rivetless surface puts more lining area in contact with brake drum.

Saves money! Not only lasts longer but also practically eliminates drum scoring. Smooth, unbroken surface—no rivet holes to catch dirt and grit!

More and more Dodge, De Soto and Chrysler dealers now have factory-approved equipment for bonding MoPar Cyclebond Linings to brake shoes. Ask them about this service. Or, if you are prepared to bond linings yourself, ask for Pre-Cemented MoPar Cyclebond Brake Lining Sets.

If you lack bonding equipment, get ready-to-install MoPar Brake Shoe and Cyclebond Lining Assemblies from your Dodge, DeSoto or Chrysler Dealer.

Two Types of Sets

To Pre-Cemented MoPAR Cyclebond Lining Sets

Each set contains enough precemented linings to service a specific vehicle completely. Can be bonded to brake shoes by those having proper bonding equipment.



2. MOPAR Brake Shoe and Cyclebond Lining Assemblies

If bonding equipment is not readily available, you can still take advantage of MoPar Cyclebond Brake Linings by using ready-to-install shoe and factory-bonded lining assemblies. No special equipment needed to install these assemblies.



See your Chrysler, Dodge, De Soto or Plymouth dealers and get ready to supply your customers with MoPar Cyclebond brakes.

CHRYSLER CORPORATION . PARTS DIVISION . DETROIT 31, MICHIGAN



Factory Engineered and Inspected for

PLYMOUTH · DODGE DE SOTO · CHRYSLER CARS DODGE "306-Rated" TRUCKS bump a curb and misalign its wheels and steering; lights could become defective; and brake linings, tires and other parts which provide for safe driving could wear out in a matter of weeks.

To keep cars safe, a simple formula has been suggested. It's just this. Ask every one of your customers these questions: "When are you going on your vacation?"

"Are you driving your car on your vacation?"

"Allow us to check it for safe performace?"

Ask them personally. Have your service manager, shop foreman or customer's men ask the same questions. Ask these questions on

postcards and in letters; in your newspaper and radio advertising. Call upon your jobber and jobber's salesmen to assist you in campaigning to keep cars safe.

George T. Christopher, president and general manager of Packard, spoke recently to several hundred attending the Michigan Safety Conference. The plainspoken executive said, "Our scientists have learned how to split the atom and develop the world's greatest physical force. We've learned how to maintain the highest standard of living on the face of the earth . . . But we just aren't very smart when it comes to safety."

He declared the problem "boils down to the individual, who never seems to realize that accidents can happen to him—until they do."

The automobile industry, Christopher said, has learned to build "pretty safe" automobiles. "But we're not magicians," he declared. "We have no control over the cars after they leave our assembly lines. We can't produce safe drivers. That's your job."

While it is the job of the highway expert to study and control the flow of traffic, it's the job of the service dealer to keep cars safe.

Here's a guide to follow for a summer safety check-up: SAFE STOPPING. Pull a wheel to inspect brake linings. Check emergency hand brake. Examine lines and cylinders on hydraulic (Continued on page 82)



Find out about the PENNZOIL PROPOSITION.

Help your profits <u>two</u> ways. It's the hottest thing in the industry!

Call your Pennzoil distributor... or write to us for his name...NOW!

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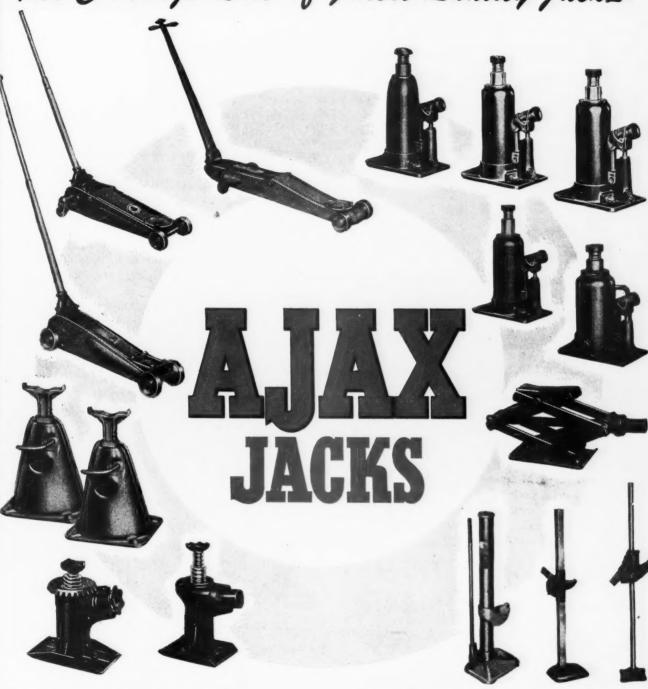




"Herb! You didn't!!"

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For Every Service Operation...for Every Car and Truck



● When you invest your money in lifting equipment, you want precision-engineered design, finest quality construction and low-cost, long-lasting dependable performance. That is what you get when you buy Ajax. With experience gained through more than 40 years of jack engineering and production, Ajax offers you a complete "Coverage Line" of shop service and tool box jacks to take care of your every need and those of your customers. When you specify Ajax, you know you are buying the best.

AJAX AUTO PARTS COMPANY
RACINE, WISCONSIN

1949 MOTOR AGE, June, 1949

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or a AFE I to neck nine ulic 82) brakes for leaks and damage. Add brake fluid when needed. SAFE STEERING. Examine wheel bearing, spindle bushings and pins; steering wheel for lost motion; steering shaft for up and down movement; cross shaft for looseness and wear. Check wheel alignment and front axle for trueness. Watch

for faulty shock absorbers, broken spring leaves. SAFE TRAVELING. Check tires for wear and make sure there's a spare. How's the horn working? And the ignition? Faulty ignition may stall the car on the highway. Are the muffler, exhaust pipe and tail pipe sound? And, a thorough lubri-

cation is essential.

SAFE VISIBILITY. Headlights, tail lights and auxiliary lights need close checking. Headlights should be beamed correctly. Check mirrors, windshield wipers and glass—all are musts for clear visibility. Cars must be kept safe.

We guess that by now, you may have noticed that we haven't used the word "selling" or "profit" in this spiel. That was deliberate. Car safety is a matter of public service, first and foremost. You're the man with the safety "knowhow." So, you're the man to perform this public service. And, the amazing part about it is, you get paid for doing this public service job—in good will, as well as cold cash.

Furthermore, you're getting your share of a third natural peak of service business. First you prepare the car for winter driving. Then, you tune it up in springtime after a hard winter. Now, give it a summer safety check-up.

Car must be kept safe.



"Elmer, either you get new suspenders or longer pants."

Bedford Named to K-F Vice-Presidency

Clay P. Bedford, former vicepresident in charge of manufacturing and a director of K-F, has been promoted to executive vice-president of the company, according to Edgar F. Kaiser, president.



Special features at NO EX-TRA COST: Sliding shelves no nuts or bolts... snap-in dividers—no nuts or bolts... bottom shelves reinforced for "stepladder" use... base support keeps out dirt—no swaying or tipping... 18 gauge prime steel construction... shipped built up ready for immediate use.

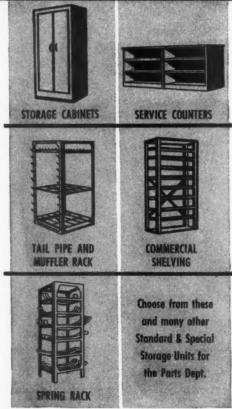
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tain all parts needed for spring shackle replacement on any Ford passenger cars, models 1928 through 1949. Shackles are interchangeable between either end of front springs and between either end of rear springs. Studs are machined carbon steel for long wear, greater strength. Each link bar has an individual rubber bushing providing a quieter ride. Shackles do not require lubrication. They are quickly and easily installed. Complete kit of four studs, shackle bars, eight bushings and eight nuts, is conveniently packaged for easy identification.

Order from your nearest Ford Dealer by specifying Spring Shackle Kit basic part numbers 5304 (front) and 5630 (rear). Priced right for profit!



Independent Garages . . . This "sign of good business" tells the town you stock Genuine Ford Parts, the ones Ford owners really like. Chances are, you can easily qualify to display this famous business builder. Your Ford Dealer has the full story—better check with him today!

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Right for FORDS!

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in the new Ford station wagon.

"Hi, Larry," said Pete. "Thank heavens you didn't take too long. These young hyenas wouldn't stay penned in too much longer."

"What seems to be the trouble, kid?" asked Larry as he opened his tool-box.

"The gas feeds through O. K.," replied Pete. "But I can't get any

spark to the plugs. There doesn't seem to be a short in any of the wires."

"Nothin' to it," said Larry. "Turn 'er over a coupla times just for a check."

"I hope you can fix me up quick so I can get to camp. These kids are getting tired, and hungry too."

Pete was right, there was no

spark to the plugs, so Larry wasted no time on further diagnosis. "Bad coil," he remarked as he took off the old one. "But I'll check it when I get back to the shop. An' just to be sure you're O. K. I'll put on a new condenser too." Finally he put down the hood confidently. "Start'er up," he ordered.

The Ford caught on the first revolution, and a smile of relief smoothed out Pete's brow.

"Pal," he said softly to Larry.
"Pipe down you brats," he yelled,
and strangely enough they piped
down. "Pal," he said again. "For
this you are my friend for life.
Much more of this and I would
have been feeding small boys to
the bull over yonder fence."

"Aw," said Larry nonchalantly.
"It's nothin'. Us mechanics . . . you know . . . Doctors of Motors . . . we help out all kindsa people."

"You sure do," replied Pete.
"Come up and have a swim some time. Camp Tokhomeupag's only ten miles the other side of town.
No swimming trunks needed tho.

"I'll take you up on that," said Larry climbing into the tow-car. "Me an' the missus." He waved as he swung back into the highway and toward Pop's repair shop.

He parked the tow-car and went to his bench. Soon Pop came walking in. "Phone call, Larry," he said. "Pete Whittle. Car's stopped again. This time he's about 5 miles north of town on the road to camp." Pop started to walk away, then added. "He didn't sound happy... I don't believe he said he liked you."

"Aw," said Larry grinning. "Me an' him's friends. He's one O. K. (Continued on page 89)



"Otis, can't you stop that silly exercising for a minute?"



WATCH
The Saturday Evening
In the Automotive Field!

HE SULTON COMPANY, Milwaykes 14, Wisconsis

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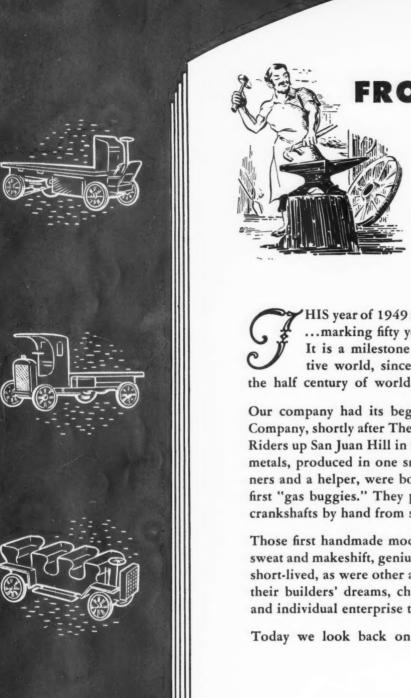


ANNIVERSARY



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50 YEARS OF CONTINUOUS BEARING EXPERIENCE



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HIS year of 1949 is Federal-Mogul's Golden Anniversary
...marking fifty years of continuous bearing experience.
It is a milestone of special significance to the automotive world, since our own history parallels so closely the half century of world-change brought by the automobile.

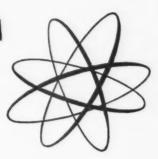
Our company had its beginning in Detroit, as the Muzzy-Lyon Company, shortly after Theodore Roosevelt led his intrepid Rough Riders up San Juan Hill in the Spanish-American War. The babbitt metals, produced in one small shop employing the original partners and a helper, were bought by the pioneering builders of the first "gas buggies." They poured their bearings and shaped their crankshafts by hand from solid pieces of steel.

Those first handmade models were laboriously put together with sweat and makeshift, genius and on-the-spot design. Bearings were short-lived, as were other assemblies. But the cars ran, and excited their builders' dreams, challenging that type of inventive genius and individual enterprise that built our nation.

Today we look back on a kaleidoscopic scene of automotive

FIFTY YEARS OF CONTINUOUS

TO THE ATOM THE INDUSTRY



improvements and rapid changes spanning fifty years and two world wars. Always, the engine demands have been for more speed, more power, more agility, more durability. The development of engine bearings has kept pace with these demands and has frequently anticipated them.

Federal-Mogul Corporation now produces millions of precision engine bearings each month, in six modern manufacturing plants with over 2,800 employees, for many leading car, truck, bus, tractor, engine and other customers.

So, from the days of the anvil, and the hand-formed crankshaft to run on hand-fitted bearings, down to the present supercharged era of atomic power development, the record of Federal-Mogul is interesting, dynamic. It is a thrilling business narrative of America at work, in the best sense of freedom and enterprise—men, machines, and money all working to a common goal . . . the creation of better products, better values, and better service for better living for more people.







50 Years of Continuous Bearing Experience

WE SALUTE THE MEN WHO MADE THIS RECORD POSSIBLE

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The men who made the automotive industry are among the finest examples of the men who made America great. They were men of vision and courage . . . who risked much to gain much, and carried thousands of others along with them to unbelievable peaks of accomplishment and progress.

We are proud and grateful for the opportunity to have been associated with and a part of an industry that has done so much in so little time.

We are proud to remain a part of an industry that in its prime retains its dynamic character and drive.



Pop O'Neill

Continued from Page 84

guy—even if he did go to college."
"Larry," said Pop solemnly. "I could hear them kids yellin' without even pickin' the receiver off the hook."

"Kids?" asked Larry. "Oh, yeah, kids. He had a lot of 'em with him." He paused as he thought of the reception he'd get. "Say, Pop, don't you think Tommy'd better"

"Let's see that coil and condenser you brought back," ordered Pop. Larry produced them and he and Pop walked over to the tester.

"Well, I'll be darned," said Larry politely. "That there tester must be busted! They're both O.K.!"

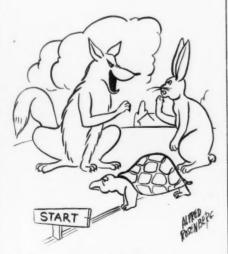
"No, Larry," said Pop patiently. "The tester's probably right. "That there mechanic that took an hour off for a ride in the country on comp'ny time—he prob'ly made another mistake."

Larry snorted. "In two words, Pop—im-possible!"

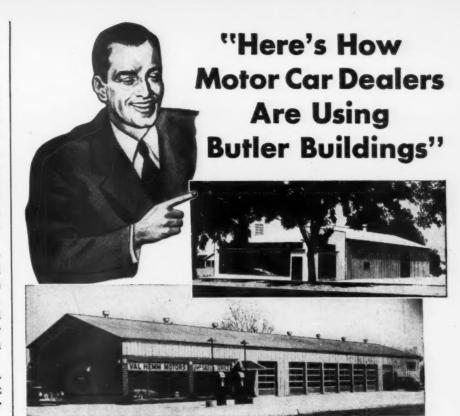
"Larry," said Pop. "You're a pretty good mechanic so it stands to reason that what you overlooked wasn't somethin' simple like a clogged fuel line."

"The somethin' I overlooked was nothin'!" stated Larry positively. "That new condenser must a' been had"

Pop didn't rise to the bait. He just kept thinking. Finally he said, (Continued on page 90)



"Wise up, ya jerk! Throw the race and you're in carrots for the rest of your life!"



You Get All These Features Already BUILT INTO Your BUTLER Steel-Aluminum Building



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First Quality Sheeting, Aluminum and Steel. Special Butler Corrugations.



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60 Ft. Width* *(Bowstring Truss Design)	City Zone State

Pop O'Neill

Continued from Page 89

"Did you check the resistor unit?"
"What?" Larry was caught. "I
put on a new coil!"

"The coil used on a '49 Ford doesn't have a resistor unit built into it. The unit is mounted behind the dash in the driver's compartment."

"How does it work?" asked Tom-

"It reduces the 6 volt current to 3 volts before the current enters the coil. A faulty unit would work O.K. until it got hot—that's why Larry could start Pete's car after it had set a while, the wires had happened to touch again.

"So all we have to do is to phone Pete and tell him to let it cool off and he can make camp O.K. before it heats up again," put in Larry thinking of the road trip at half past five.

"Wrong again," laughed Pop, "An' you know it. Them wires are really apart now prob'ly and he's got an open circuit."

"Can't we tell him to cross the wires an' cut out the resistor?" persisted Larry thinking suddenly of the greeting eight angry kids would have for him.

"No," Pop said firmly. "The coil would heat up and might even melt because it wasn't designed to handle such high voltage."

"Tommy," Larry put in quickly.
"Now you know what's wrong you can get it started. I've got to finish up that Olds in the back room. I wanta get it done before quittin' time."

"If you were in the Army, you'd get both medals the same day," remarked Pop.

"What medals?" asked Larry.
"The Ancient Order of My
Achin' Back an' the Blue Ribbon
for Buck Passers," said Pop.

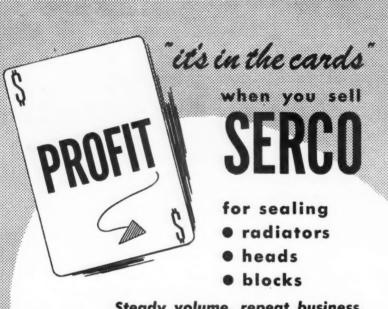
"Sometimes the smartest men have to be buck passers if they're gonna show they're smart," Larry came back. "Remember in the first World War when you won the Croix de Guerre?"

Pop nodded.

"Well I heard there was some fancy buck passin' in the top brass. They couldn't find even a French general willin' to kiss you."



"Doctor, this is my husband. He suffers from the delusion that he is an ostrich."



Steady volume, repeat business, satisfied customers. They all add up to profit...profit you get by selling SERCO.

SERCO seals all types of leaks in automotive cooling systems quickly and thoroughly. It's a one-application seal that sells and stays sold. SERCO remains in suspension in radiator coolants. It flows freely through an engine's cooling system sealing each leak, large or small, with a flexible wedge between the edges of the metal. SERCO forms a more lasting seal because it actually gains strength with heat and age.

Don't gamble with unknown, untried brands. Stock and sell quality SERCO products . . . used by millions of motorists all over the world and guaranteed satisfactory.

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Famous FRAM Oil & Motor Cleaner

Over ten million motorists can't be wrong . . . they choose Fram and here's why . . .

Quality: Fram Filters give top performance, longer cartridge life. They extend engine life by removing the damaging dirt, dust, grit, sludge and abrasives that really murder cars. All Fram Filters are backed by an unconditional guarantee.

leadership: Fram is the recognized leader in the field with five strategically located plants turning out over 20,000,000 cartridges a year... with a research laboratory constantly striving to bring you new and better filters.

Advertising: Motorists know about Fram. Fram's big newspaper, radio and consumer magazine advertising campaign educates them on oil filters . . . sells the name—FRAM!

You make extra profits when you sell Fram Oil & Motor Cleaners...(1) the initial sale...(2) the replacement cartridges...(3) the extras such as spark plugs, fan belts, radiator hose, additional oil sales... because when you ask "How's your Oil Filter?" it gets you under the hood!



Sell COMPLETE ENGINE PROTECTION

with 4 FRAM FILTERS

Revolutionary New FRAM Carburetor Air Filter provides positive protection through completely new principle. Will not pass harmful dust-laden air. Easier to replace its low-cost cartridge than to clean old-style filters.

2 FRAM Gasoline Filter removes solids and water from gasoline. Protects finely adjusted modern carburetor mechanisms.

Sensational New FRAM Positive Crankcase Ventilator removes harmful blow-by to prevent sludge, acids and oil deterioration in the crankcase. An electrically driven blower draws clean, filtered air from the Fram Crankcase with continuous uniform air flow, regardless of engine or vehicle speed.

famous FRAM Oil & Motor Cleaner "cleans the oil that cleans the motor." Removes sludge, carbon and corrosives manufactured in the engine.

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FRAM

OIL · AIR FUEL FLIERS

MOTOR AGE, June, 1949

91

Clutch to over-run, thus giving the "free-wheeling" effect.

When the Roller Clutch is driving, as above, it is more or less obvious that all the various elements of the Planetary Gearset are revolving at the same speed; if the throttle is closed, the Roller Clutch releases, and Main Shaft 1 revolves at a slower speed than Outer Race

33, resulting in the various elements of the Planetary Gearset revolving at slower speeds than the Ring Gear 32. When the speed of Main Shaft 1, and Pinion Cage 13, falls to 70% of the speed of Ring Gear 32 (the Overdrive Gear ratio), the Sun Gear 12 stands still, for that instant only, and as the speed of the engine (and Main

Shaft 1) falls further, Sun Gear 12 revolves backward.

If the car speed reaches some predetermined point (26-28 mph on most cars) the Governor 39 operates to close an electrical circuit. through the Relay, thus energizing Solenoid 31. When thus energized, the Solenoid Plunger moves inward, compressing a spring, which in turn urges Pawl 29 toward engagement with the notched Sun Gear Plate 8. However, since the latter is then revolving, this rotation carries with it, by frictional contact with the hub of Plate 8, a Balk Ring (not too clearly shown) which acts as a latch to prevent the inward movement of Pawl 29 until Plate 8 has ceased rotation, and made a slight rotation in the reverse direction (not more than one-quarter turn). From the preceding paragraph, it will be seen that such engagement must always occur at almost perfect synchronism for the Overdrive ratio which has been thus engaged. and such engagement, which does not occur until the driver chooses to make it, either consciously or unconsciously by lifting his foot from the accelerator, is very smooth. It has the additional very important advantage of rendering Overdrive operation, although automatic, completely subject to the will of the driver if he chooses to exercise it.

Once engaged, the Overdrive continues in operation until the car speed falls to a value about five miles below the lowest speed at which it may have been previously engaged. When thus engaged, the Main Shaft 1 drives the Pinion Cage 13, and the pinions, revolving about their own axes in the revolving cage, turn the Ring Gear 32 from the reaction of the now-stationary Sun Gear 12. The speed of the Main Shaft 1 (and the engine. when the transmission is in third speed) is 0.7 times that of the Output Shaft 33. Likewise the power available, under full-open throttle, is only 0.70 as great as that available in direct drive (excepting at the higher car speeds, where this direct-drive advantage diminishes, and at maximum car speed, where more power is actually available through Overdrive).

Thus, whereas the reserve power (Continued on page 94)

always on the lookout for SERVICE IMPROVEMENTS

We never rest until our better's

Yes, the moment we realize a certain part can be improved upon—where it will mean a service job better done or the part lasting longer—we're off!

Such parts are always incorporated in all EIS kits.



Improved Wheel Cylinder Cups for Chrysler-built cars

Ribs molded into cup, making rim of cup concave for more flexibility, add to a better seal between cup and cylinder wall.



Oversize Pistons

Cylinder has to be honed at each rebuilding. Consequently, oversized piston should be used to assure proper fit.



Improved Wheel

Cylinder Cup

Heavier lip, of our own design, means better sealing, consequently better service.



Brass-backed for better service and longer life; patented by-pass grooves for faster brake action.

If your Jobber cannot supply, write us for latest literature

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Middletown, Connecticut



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DRILLS . SANDERS POLISHERS . GRINDERS **IMPACT WRENCHES**

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Screwdrivers, Nut Setters Saws, Hammers, Tappers Valve Shops, Fender Hammers

It weighs only three pounds, is only 7-7/16 inches in length-yet in this small handful packs power unAvailable in seven drilling speeds, from 550 to 5000 R.P.M. Write today for Silver Line Catalog E-2, or see your Thor distributor.

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SOMETHING EXTRA

IN BRAKE SERVICE, TOO

FLUSH and FILL

When your customer's brake fluid is low and requires a shot or two to bring it up, you can take care of him with Puritan Hydraulic Brake Fluid.

But if you want your customer to be sure of complete brake safety—for a long time to come—you'll suggest something extra—a Flush and Fill job—a thorough cleaning out of dirty, gummy, overworked brake fluid with Puritan Hydraulic Brake Flushing Fluid and a replacement with fresh, active, Puritan Brake Fluid.

And Puritan Hydraulic Brake Flushing Fluid makes this flushing job easy to do, and profitable too. Once through the line and the system is thoroughly clean. Then a filling of Puritan Brake Fluid and your customer is assured of many miles of safe braking.

Just tell your NAPA jobber you want to do Flush and Fill jobs. Let him send you fast-acting Puritan Hydraulic Brake Flushing Fluid and Puritan Hydraulic Brake Fluid.

FLUSH AND FILL FOR BRAKE SAFETY



1. Clean hydraulic brake line with fast-acting Puritan Hydraulic Brake Flushing Fluid.



2. Refill with non-gumming, all-"miscible" Puritan Hydraulic Brake Fluid.

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FURITAN COMPANY, INC.

HYDRAULIC BRAKE FLUID AND FLUSHING FLUID . GASKA-SEAL NO. 1, 2 AND 3
SHOCK AND KNEE-ACTION OIL

Warner Overdrive

Continued from Page 92

available in Overdrive is more than ample for most of the conditions of driving, there are occasions, when passing another vehicle, or in climbing a hill, where it is highly desirable to have the full power of direct drive, without reducing the speed of the car to the point (21-24 mph.) where the Overdrive releases of its own accord. Under such circumstances, the driver merely presses the accelerator pedal beyond the wide-open position. This operates the Overdrive Kickdown Switch, opening the Solenoid circuit, urging the Pawl 29 toward release from the Sun Gear Plate 8. However, due to the driving torque reaction, Pawl 29 is pinched, and cannot release unless the driving torque is momentarily relieved. This is accomplished by the closing of the lower contacts of the Kickdown Switch. which serve to connect the ignition distributor primary breaker points with the ground through a contact connected to Terminal No. 6 of the Solenoid. This interrupts the ignition of the engine, thus relieving the pinching of the Pawl, which immediately snaps to the released position, whereupon the Solenoid contacts are opened, thus restoring the ignition. This entire action occurs with such rapidity that the period of ignition interruption, as measured by infallible laboratory and road test methods does not persist for more than three sparks on the average 6-cylinder engine. When the Overdrive has been thus disengaged, the driver may hold it in this condition at his pleasure until he chooses to re-engage it by merely lifting his foot from the accelerator, momentarily, whereupon the Overdrive is resumed, unless, of course, the car speed has in the meanwhile fallen below the release point (21-24 mph.).

Although the normal procedure is to operate the unit as above, taking advantage of the free-wheeling, which permits gearshifting without declutching at speeds below those where the Overdrive is in operation, there are times, in descending long, steep hills, where it is

(Continued on page 96)

Stock Up Now for BIG PROFITS' for BIG PROFITS' Next Fall! HE

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HARRISON

HEATERS · DEFROSTERS THERMOSTATS

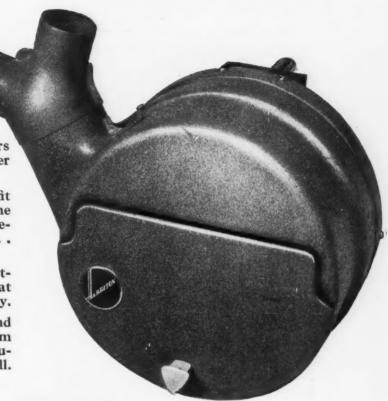
The fast-moving line of Harrison Heaters and Defrosters covers a wide range of car and truck requirements.

Harrison's efficient Heaters and Defrosters—improved in appearance—give your customers greater heat output . . . are far easier to sell and to install.

Harrison Heaters and Defrosters fit almost every car built since 1940. The low price of the Harrison line is designed to capture a large market . . . to swell your profits.

The 10 package Thermostat assortment includes the right thermostat for 90% of the cars on the road today.

Order Harrison Heaters, Defrosters and the Thermostat Display assortment from your nearest United Motors Distributor and be set for big profits next Fall.



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The colorful display assortment of Harrison Thermostats is designed to catch your customer's eye . . . to stimulate sales by reminding your customers to

have their often-overlooked thermostat checked. The easy availability of the right thermostat for their car, plus the high regard the public has for well-known Harrison quality will produce sales results for you.



SUPER DASH HEATER-DEFROSTER COMBINATION

The Harrison dual purpose Heater-Defroster is popular with comfort-conscious drivers everywhere. You'll find the turn-over of these Heater-Defroster Units at the top of your accessory sales list. Top quality is built in with an all-copper tube and center-type core, the largest capacity motor we have ever put in a heater, an 8-inch propeller fan, and large take-off tubes.

HARRISON HEATERS
A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS



HARRISON

HARRISON RADIATOR DIVISION

GENERAL MOTORS CORPORATION, LOCKPORT, NEW YORK

Warner Overdrive . . Continued from Page 94

desirable to use the engine as a brake. Under such circumstances, the Overdrive Dash Control may be pulled out, swinging Lever 24 forward, thus moving Rail 21 and Shift Fork 27 backward, thus shifting Sun Gear 12 so that the teeth (visible just to the right of Collar 28) will engage the corresponding internal teeth of Cage 13. This

causes the entire group of internal working parts to revolve as a unit, eliminating both free-wheeling and Overdrive action. In making such a lock-up, it is necessary, if the car is in motion, to open the throttle, in order to cause all parts to revolve together, or to release the Overdrive, if engaged (using the accelerator pedal, as above), pulling out

on the Dash Control immediately thereafter. Thereafter, the car will have the usual conventional drive in all respects, until the driver chooses to push in the Dash Control, which may be done easily, at any time.

When the car is operated with the Dash Control pushed in, which is the normal method of operation. the Roller Clutch will release the drive whenever the throttle is closed (at all speeds below those where the Overdrive is operative). In shifting gears, it is necessary to release a clutch somewhere between the engine and car wheels. Since the Roller Clutch, to the rear of the transmission, releases automatically, it is unnecessary to also release the main clutch, in front of the transmission, with the foot for the ordinary shifting of gears. The main clutch needs ordinarily to be released when starting the car from a standstill, only. All other gearshifts (below Overdrive speeds) may be made by lifting the foot from the accelerator, pausing very slightly for the engine speed to fall and shifting. At speeds where the Overdrive is engaged, it will be noted that there is no freewheeling (the Roller Clutch is not used in Overdrive) and the clutch pedal must be depressed.

Since the Roller Clutch will not drive the car backward, the transmission reverse shift mechanism is always provided with special means whereby the Shift Rail 21 is pushed backward, thus locking out the freewheeling whenever the car is reversed.

(Continued on page 100)





AUBURN CLUTCHES



COVER REMOVED TO SHOW CONSTRUCTION

- Patented Flexible Hub Center
- Torsional Heavy Spring Vibration Dampers With Two-Way Shock Absorber Action
- Patented Spring Cushion Feature Gives Smooth Engagement And Full Facing Contact Pattern
- B.L.M.A. Drilled Facings

- Springs Do Not Contact Pressure Plate—Gives Longer Spring Life
- Leverage Multiple Gives Soft Pedal And Full Facing Pressure
- Stiff "Channel Section" Cover
- Open Cover Design-Runs Cooler
- · Rigid Ribbed Pressure Plate

Approved and Accepted as Original Equipment since 1937. Now also available for replacement. Manufactured in a new, modern plant equipped with mass production machine tools for an annual capacity of over a million complete clutch assemblies and plates.

AUBURN CLUTCH CO.

WAREHOUSE STOCKS IN 39 MAJOR DISTRIBUTING CENTERS

PRODUCTS

AUBURN. INDIANA, U.S.A.

1949

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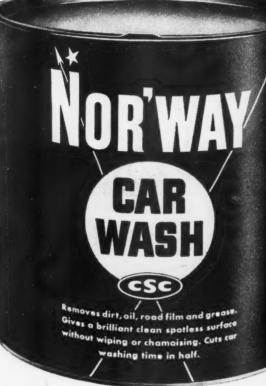
Brown-Type



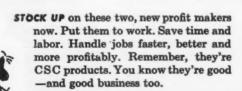
THEY'RE NEW! THEY'RE NOR'WAY!

Look at the NOR'WAY Line for '49!
There's Cooling System Cleaner,
Quick Flush, Stop Leak, and
Anti-Rust, and NOR'WAY
DRY-EX,® and now, two
new CSC products—
NOR'WAY Car Wash and
NOR'WAY Carburetor and
Small Parts Cleaner.





NOR'WAY CAR WASH is not a soap. It contains no harsh acids or abrasives, no kerosene. Made of synthetic detergents, it works wonders anywhere—washes away grease, oil, road film, bugs, and dirt from wheels, tires, body, windows, and chrome. It gives a brilliant, clean, spotless surface. It's self-drying, non-streaking, simple to use—no wiping or chamoising. Cuts car washing time in half. Available in 4-pound and 18-pound cans, with handy measuring cup.





NOR'WAY CARBURETOR & SMALL PARTS CLEANER

is a topnotch solvent cleaner that's quick and efficient. It whips into carbon, gum, grease, dirt, and deposits from tetra-ethyl lead. Ideal for carburetors, fuel pumps, cylinder blocks, and other metal parts. Restores brilliance of white metal parts. Contains no acids, is non-corrosive. Will not mar, pit, or attack metals in any way. Safe, easy to use, long lasting. It's available in 5-gallon cans or in cans containing 4 gallons of Cleaner and a special dipping basket.

COMMERCIAL SOLVENTS CORPORATION . SPECIALTIES DIVISION

Makers of Nor way and PEAK Anti-Freeze

Terre Haute, Indiana

a friend-winning anti-freeze



Push Nor'way® (methanol type)
Anti-Freeze this Fall. Sell it to your
customers—it will perform so well for
them that it will win their lasting
friendship for you for years to come.
PLACE YOUR ORDER EARLY
with your jobber.

Sell it for profit—fair margins are assured for Nor'way is fair traded in all states where fair trade laws are in effect.

Here are some of the talking points of NOR'WAY:





Has pocketbook appeal

The reasonable price of Nor'way plus its one-third extra strength over denatured ethyl alcohol anti-freeze gives motorists the most anti-freeze protection at the lowest cost.





Lasts a long time

It has a special ingredient that reduces evaporation. Most cars can use Nor'way for it will not boil away at ordinary engine operating temperatures.



Practically odorless

Gives no disagreeable odor at any time.





Has a 5-way anti-rust

Its anti-rust ingredients protect all metals of a cooling system against corrosion.



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1949

Backed by Commercial Solvents

—a fine chemical company, makers of hundreds of fine products backed by CSC research.

ADVERTISED COAST-TO-COAST WITH PEAK® PERMANENT-TYPE ANTI-FREEZE

COMMERCIAL SOLVENTS CORPORATION

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SPECIALTIES DIVISION . 17 EAST 42nd STREET, NEW YORK 17, N. Y. . MAKERS OF FAMOUS NORWAY COOLING SYSTEM PRODUCTS AND DRY-EX

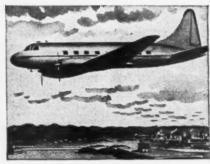
How SPEED helped catch "bugs" in the lacquer



Final finish on pianos mysteriously going "sour." Production halted. Lab needed X-ray diffraction camera to identify impurity. At 9 A.M., 10-lb. camera Air Expressed from 1100 miles away, delivered by 4 P.M. same day. Cost, only \$3.58. Company uses Air Express as routine method to get supplies fast, keep inventory low.



That low \$3.58 figure was total cost for Air Express and included door-to-door service. That makes the world's fastest shipping method exceptionally convenient, complete, and easy to use.



Scheduled Airlines carry Air Express on every flight. Speeds up to 5 miles a minute! Direct by air to 1300 cities; air-rail for 22,000 off-airline offices. Serves many foreign countries, too.

FACTS on low Air Express rates

Package of blueprints (4 lbs.) goes 800 miles for \$1.54. Special tools (21 lbs.) go 600 miles for \$3.87. (Every kind of business finds Air Express pays.)

Only Air Express gives you all these advantages: Special pick-up and delivery at no extra cost. You get a receipt for every shipment and delivery is proved by signature of consignee. One-carrier responsibility. Assured protection, too—valuation coverage up to \$50 without extra charge. Practically no limitation on size or weight. For fast shipping action, phone Air Express Division, Railway Express Agency. And specify "Air Express delivery" on orders.



AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE SCHEDULED AIRLINES OF THE U.S.

Warner Overdrive

Continued from Page 96

The Overdrive may be used, also, in connection with second gear. Many drivers, in city traffic, will accelerate in second gear up to the cut-in speed, engage Overdrive in the usual manner and use the Overdrive-second gear combination which approximates the usual convention third speed. This eliminates one gearshift, and the "Kickdown" feature is very useful for a quick shift into second gear in traffic tight spots. Thus used, the Overdrive provides, in addition to its own exclusive features and advantages, most of the features of automatic transmission operation.

While the method of installation of the Overdrive is apparently simple, sufficient complications enter into the matter to make it practically impossbile excepting as original factory equipment. In addition to possible interferences from frame members, etc., a new, shorter propeller shaft is required. and different rear engine mounts may be needed, in addition to special transmission shafts, housings and controls. Even on cars where the Overdrive is available as optional equipment (at extra cost), it is usually not practical to attempt the installation, in the field, on cars not so equipped at the factory, unless the car manufacturer has made kits for such field installation through the dealer.



"We've only been (hic!) getting 'bout one mile to a gallon."



MOTOR AGE, June, 1949

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men work on a volume-incentive basis with a \$50 a week guarantee. "The \$50 doesn't really mean much," explains Hayes, "but it does give the men a sense of security." Actually the men earn much more than their minimum guarantee as Hayes believes in letting them "share in the good times." Five of the men started

with Hayes on the G. I. "On the job" training, and they have developed into top mechanics.

There is very little turnover, and three 20-year men. Recently the firm ran an ad—"500 years with Orrin B. Hayes"—pointing out that the combined seniority of the employees totaled more than 500 years. There is a small coffee

urn in the shop complete with sugar and cream so that the men can have a free cup of coffee whenever they wish.

Service procedure in the Hayes shop is exceptionally well organized, and it is dominated by a "Tower Control" system installed at a cost of \$3,000.

At first glance it seems like an elaborate control system for a garage of this size, but actually it has improved service many times over, according to Robert Hayes who shares the management of the firm with his father.

"The tower watches the 'little things' that are so easy to miss," explains Bob.

A few days after a job is completed, the customer is sent a card on which he can express his satisfaction or dissatisfaction about the work. Haves inaugurated this in 1929, and he believes that he is the originator of the idea. In addition the firm also operates a perpetual customer followup at 30, 60 and 90 day periods. If the customer doesn't return for service after the 90 day period he is personally contacted by the service manager to see what is wrong. In other words. no effort is spared to make sure that the customer is made aware of Hayes willingness to serve him. Every phase of the operation is directed toward the end of making the customer feel that Haves takes a personal interest in his car.

(Continued on page 104)



"I was just looking at the ball game on Bill's television set."



BUELL AIR HORNS WITH VOLUME CONTROL

Buell Air Horns can now be sounded softer than standard horns for city driving. Still give miles of volume for highway emergencies. All controlled by a finger-tip throttle.

These newly developed horns are already very popular with traveling executives and other "class-car" owners. Dealers are selling the "Streamliner" Horns as fast as they come in. One demonstration sells.

Up to \$50 profit on each sale. Write for descriptive literature, prices, discounts.

Distributor inquiries invited

BUELL MANUFACTURING COMPANY

915 WEST 49th PLACE

CHICAGO 9. ILLINOIS

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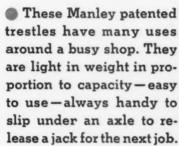
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305 • 5-TON

151/16" to 25"

Adjustable from

304 • 2-TON

11" to 173/4"

Adjustable from

Investment in good Manley equipment pays off-over and over again.



307 • 10-TON

18" to 30"

Adjustable from

WRECKING CRANES (3-Ton)

FLOOR CRANES

SOLD ONLY THROUGH AUTOMOTIVE JOBBERS

306 • 7-TON

203/8" to 30"

Adjustable from





The Best Equipped Shop Gets the Profitable Business

If their car breaks down or is wrecked within a 200-mile radius, the customer calls the garage for assistance. The garage sends a wrecker and a replacement car and hauls back the wreck—without charge. Recently a customer started on a trip and got as far as Chicago and had a wreck. Hayes sent a car for the cus-

tomer to continue the trip with and hauled back the other car. Little touches like this cost money, but that customer will always be a friend.

Hayes doesn't do much promotion work to sell his service because he feels that his present level of \$10,000 a month customer labor is all he can handle properly. Too much volume would tend to impair quality, he feels. But he does feel that his garage can do the best service work on Oldsmobiles, and he constantly hammers at Olds owners to bring their cars back to him. His aim is to have their cars function so well that when they get ready to buy another car it will be an Olds. In line with this he sends bulletins to independent garages so that they too can do good work on Oldsmobiles. The independent garages appreciate this, he reports, and in many cases they recommend that the car be taken to Hayes for service. Hayes stocks \$35,000 to \$40,000 in parts, and sells about \$12,000 worth

One of Hayes' few promotions has been remembering the first anniversary of a car purchase. Before the war he used to send a bunch of roses to the customer on this day, but now he sends a remembrance card good for a free lubrication job. The roses always created a sensation, he recalls, but the expense became too great and the grease job was substituted.

"We have always been extremely service minded and that's the best kind of promotion there is," Hayes and his son agree.

Shut-Down Period During Changeover Seems Necessary

Automobile manufacturers who accomplished production miraeles by changing models with practically no down-time are not at all certain that the performance can be repeated in a normal competitive market. Spokesman for one company says that it is not so much a matter of manufacturing skill as one of merchandising the tag end of a model run. He points out that a shutdown probably will be necessary to allow dealers to clear out accumulated inventories since the cars would be almost impossible to move if customers know a new model would be available within a few days. He says he has not yet heard of any workable method to get around the obstacle, although there is bound to be criticism from the public and organized labor.



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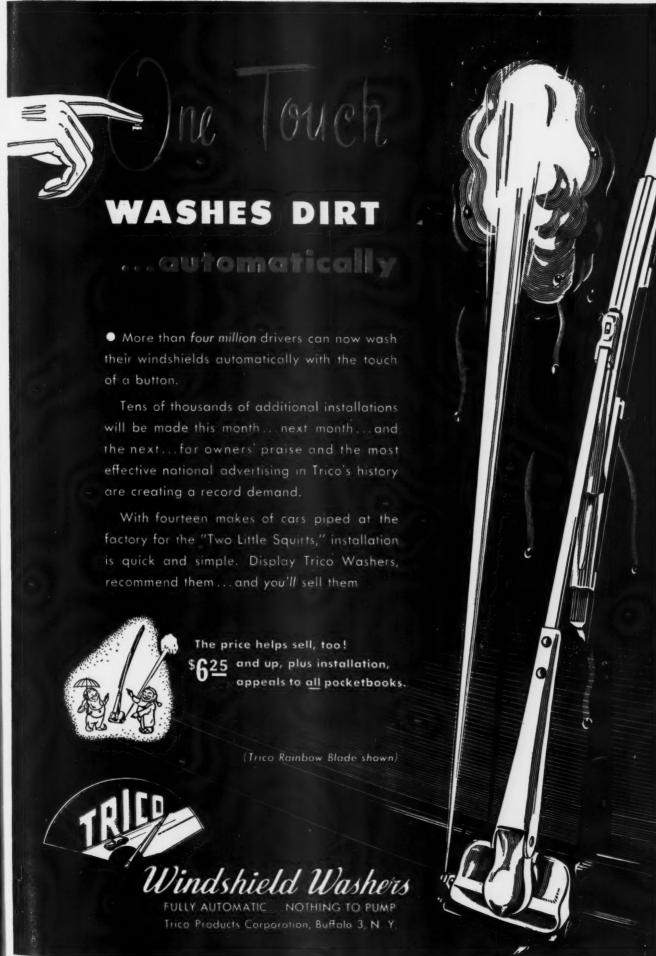
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Custom Bodies .

Continued from Page 67

are always right, so the master craftsmen duplicated the old carriage right down to the plush upholstery on the doors and the windows that raise and lower with leather straps. Today it appears square and antiquated to the outsider, but for certain, this lady, now not so young, has the only car of its kind in existence.

This is only one of the hundreds of unusual cases which have confronted this company in the past 61 years. For instance, the unusual back seat arrangement seen in Figure 1 is the interior of a Cadillac built for His Holiness, Pope Pius XII. The folding seat opens out before a cabinet which has a sliding panel on which his secre-

tary can write while under way.

What have we in Figures 2 and 3? Fundamentally, it's a Mercury with a body and interior of special sport-car design. The interior view in Figure 2 shows that it follows aircraft cockpit styling, and the construction is aluminum. The roof is made of Plexiglas, and the fenders (which turn with the wheels in steering) completely cover the top half of the wheels.

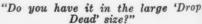
One of the specialties of the Derham Body Company is custom roofs of the cloth-over-metal type. One variation of this style is seen in Figure 4. This Cadillac town car was altered to conform with the desires of the late Mrs. Evelyn Walsh McKean. Another Cadillac with a similar roof, except that it continues over the front seat, is driven by Edward, Duke of Windsor.

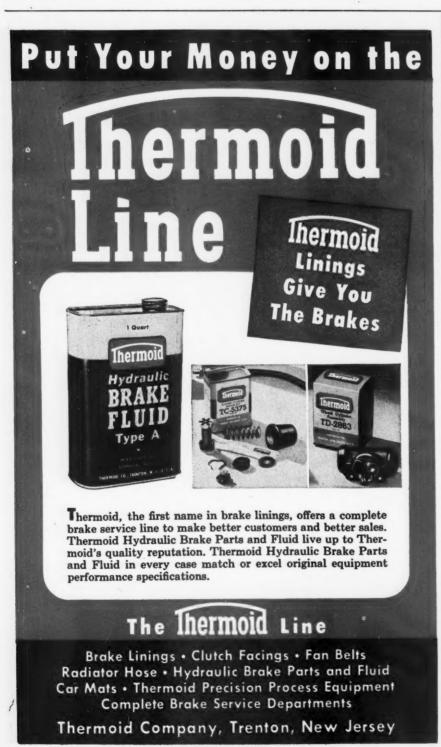
Speaking of Windsors, note the odd-shaped Chrysler in Figure 5. The owner of this car likes a Chrysler, but he's also very partial to the characteristic lines of the Lincoln Continental. Most people would choose between one or the other, but this man took his problem to the Derham brothers, where they arrived at a happy medium. It looks more like "car-breeding" than body-building, doesn't it?

Numerous orders have been placed for invalid cars like the one shown in Figures 6, 7, and 8. A

(Continued on page 110)









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1949

quality of products, service and sales support.

... a complete battery merchandising service that brings you all you need . . . to meet competition . . . to sell all prospects . . . to increase your profit substantially.

Here's WHAT YOU NEED . . . and EXIDE HAS IT:

- 1. Batteries of outstanding performance
- 2. A powerful national advertising campaign
- 3. A practical battery service program
- 4. A merchandiser that displays and sells batteries
- 5. Service equipment for profitable ... safe recharging
- 6. Time-saving battery tools

SEE YOUR EXIDE DISTRIBUTOR

"Exide" Reg. Trade-mark U. S. Pat. Of.

1888...Dependable Batteries for 61 Years...1949

HERE'S HOW YOU

to h



ALSO MAKERS OF WALKER SILENCERS, JACKS AND ELECTRIC LIFTS

CASH IN ON Sig Chang ... WALKER'S SENSATIONAL, NEW OIL FILTER SELLING PROGRAM!

• Every time you tell a customer it's time to change oil, tell him it's time to change his sludge-soaked filter, too. But don't stop there! Tell him it's time to change to a Walker-America's finest oil filter!

Explain how clean oil is wasted through a dirty filter. Follow up by telling him why Walker is a better oil filter . . . that it's built for modern, high-speed engines ... that it's specifically designed to give him cleaner oil, better engine protection, longer filter life.

It's easy to show how Walker's patented Laminar construction filters oil three ways . . . how it actually works like three filters rolled into one. It takes out even the tiniest bits of power-clogging dirt

and sludge-keeps oil clean for thousands and thousands of miles!

Clinch your sales with Walker's definite guarantee against channeling, by-passing or migration of the filtering material. Walker is the only oil filter that gives your customers absolute assurance of predictable performance.

Remember, every car, truck and tractor you service is another chance for increased filter business, extra filter profits. Prove it to yourself. For one week ask every customer, "May I change your oil filter?"

Use Walker's powerful point-of-sale material to help you. Tie in with Walker advertising. Make this your best and most profitable selling season!

WALKER MANUFACTURING COMPANY OF WISCONSIN . RACINE, WISCONSIN GET YOUR SHARE OF THE BIG CHANGE WITH MALKER OIL FILTE



... then why make Tube Repairs the HARD WAY?

Go ahead and laugh at the guy who tries such a stunt. But it's just as goofy to spend at least twice as much time making hot tube repairs as it would take to do the job with quick, safe Bowes Chemical Process.

When you figure your cost of doing business, if you don't include your time you're lying to yourself. Get paid for your time. Now, if you had to give sloppy tube repairs to save that time, you'd be foolishly running business away. But you don't! By making Bowes "Seal Fast" Chemical Process Repairs you make more repairs . . . at less cost to you . . . in the same time . . . and you're actually giving your customers safer, more dependable service! Add that up-and it comes out Bowes "Seal Fast"!

Boost Spring Profits with BOWES Chemicals!

Now's the time to make sure you have plenty of Bowes "Seal Fast" Chemicals! Push these three fast sellers as a team and boost your spring profits:

RADIATOR KLEN-ZUR

Quickly removes the rust and dirt of winter . . . makes the cooling system work like new.

RUST-ROUT

Protects the cooling system, prevents accumulation of more

RADIATOR STOP-LEAK

Seals any existing leaks and effectively prevents new leaks.

BOWES "SEAL FAST" CORPORATION INDIANAPOLIS 7, INDIANA

Custom Bodies

Continued from Page 106

special rolling chair is made so that the invalid can be rolled from the house right into the car, the chair fitting right into place in the back. Such a job involves many complications. In this case the rear compartment was completely redesigned and the head clearance was increased to allow sufficient room for the passenger in the wheel chair. Notice, in Figure 7, the special ramp for rolling the chair into the car, and in Figure 8, the arrangement for keeping the seat from shifting around while the car is in motion. The wheels lock into position when the chair is in

Leading automotive designers recognize the capabilities of the Derham Body Company, too. When Raymond Loewy, who has been designing automobiles for years, wanted a car built to his own personal taste, he brought his plans to Jim and Enos Derham. The result was the unusual version of a Lincoln Continental shown in Figure 9. Note that the grille shows some of the Studebaker characteristics.

The fact that the Derham Body Company is world renowned is obvious from the sources of some of its orders. For instance, Ibn Saud, King of Saudi Arabia, has recently received delivery on his 1949 Lincoln Cosmopolitan sedan. On this job the front seat was replaced with

(Continued on page 112)



"Mind if I use your phone?"



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for the biggest harvest of sales you ever had!

2 COMPLETELY NEW ARVIN CAR HEATERS

-Most Amazing Values Ever Offered

Lowest Selling Prices • 2-Fan Defrosting • 25% more heat · Better heat circulation · Double efficiency with two 8-blade fans . Special foot warmer . Single low current consuming motor • Multi-Speed Push-Pull Switch • Beautiful spacesaving new design

And introducing for the first time:

WINTER AIR CONDITIONING with FULL RANGE CONTROL

The simple addition of a low-cost Fresh-Flo Kit (with extra profits for you) makes the Arvin 79 Heater a combination outside air or recirculating heater! 100% Outside Air Heat!



CASH IN ON ARVIN'S EARLY BIRD TWINS

2 Wonderful Deals (Plus the extra profits you'll make with "Early Bird" sales)

DEAL No. 1



For business-Perfect for displaying dozens of items. At home—A smart tray top table that'll delight your wife. Top lifts off for serving tray. All you have to do: Place your order NOW with your Arvin Jobber for 8 Arvin Duo-Flo Car Heaters (either Model) and at least 4 Defrosters, to be shipped prepaid from the factory—and this beautiful, multiple-use table will be sent with them absolutely free!

DEAL No. 2

FREE - All-Metal Sturdy, Comfortable Chair

Shipped free and prepaid with your order for 16 Arvin Duo-Flo Car Heaters and at least 8 Defrosters.

DEAL No. 3

FREE - Both Table and Chair

Shipped free and prepaid with your order for 24 Car Heaters and at least 12 Defrosters.

Plus powerful new Arvin displays - See your jobber salesman



Columbus, Indiana



ACT NOW!



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a narrow bucket seat for the driver, and a wide easy chair for the King. This throne-like perch is set back so that there is more than enough leg room. In place of a license plate is the coat of arms in gold leaf. The entire car is upholstered in leather, this being cooler in the torrid climate.

Both the King of Egypt and the President of Brazil are using custom built Cadillac touring cars like



Fig. 10. Custom Built Cadillac

the one seen in Figure 10. These are only a few of the countries

throughout the world whose leaders travel in cars converted, to suit their individual needs and tastes, by Derham. Their requests range from assassin-resisting bullet-proof cars to open models with wide running boards for hunting trips.

The experienced personnel at Derham Body has been associated with the company for many years, and no reasonable order is too difficult for these men to handle. Of course, ample room and equipment is an important factor in this type of work. The building is four stories high, with separate sections for wood work, metal work, upholstery, painting, storage space, and so forth. The front half of the first floor is devoted to the showroom and offices. It's a business which caters to a limited clientele, but they know what they want, they are willing to pay for it, and they can get their job done to suit them at Derham Body Company.

General Motors has announced a new program designed to make available a standard automatic transmission fluid to automobile owners through oil company filling stations. Previous fluids required to service the Hydra-Matic and Dynaflow drives have been available principally from GM dealers as a measure to protect owners from faulty or incorrect transmission lubrication. Under the new program, oil companies may obtain detailed requirements for transmission fluid from H. R. Wolf, assistant to the technical director of GM Research Laboratories.

Transmission fluids marketed by petroleum companies to GM car owners will be identified by the qualification number embossed on the lid of all containers. Each company will use its own trade name and in addition the general term "Automatic Transmission Fluid—Type A". The letter "A" indicates that the fluid is for passenger cars.



SKIL Bench Grinder 447

The big, full-duty grinder with the "little grinder" price

More Features . . . More Quality . . . More Work Capacity



FULL-SIZE 15" SPINDLE

A really full-size grinder—long 15 in. spindle—easier to grind on sides of wheel. Far better when used with wire brushes.

BIG, POWERFUL MOTOR

Quiet, vibration-free . . . ideal for sustained heavy duty service. Split phase, 50/60 cycle. Totally enclosed for protection from dirt and grit.

OVERSIZE, SEALED BALL BEARINGS

Extra big, ball bearings for smoother operation—longer life. Completely sealed for full protection against dust, dirt and grit.

ADJUSTABLE, MACHINED TOOL RESTS

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Set-ups are simpler and faster with these easy-to-adjust tool rests. Machined, too, for precision work in any position.



HEAVY CAST BASE

Big, solid working base with rubber feet. Won't rock or "walk." Won't dig in work bench top. Plenty of weight to insure stability and smoother operation.



REMOVABLE, CAST WHEEL GUARDS

Removable feature increases grinder uses. Guards are extra wide for use with wire brush wheels.

EXTENDED END BELLS

You get more working room with 447. Extended end bells give extra clearance around wheels for more convenience, greater efficiency on a wide range of jobs.

Full-sized SKIL Bench Grinder, Model 447, has plenty of weight and power. Sharpens, grinds, buffs or polishes. Extended end bell and wheel guard design provide extra work clearance that makes any job easier to do. So attractively priced you'll want to spot several Model 447's in convenient shop locations. Ask your SKIL Tools Distributor to demonstrate easy-to-own SKIL Bench Grinder, Model 447 today!

SKIL TOOLS ARE MADE ONLY BY SKILSAW, INC.

SKI TOOLS
PREUMATIC

SKILSAW, INC.

5033 Elston Ave., Chicago 30, III.

Factory Branches in Principal Cities

In Canada: SKILTOOLS, LTD., 66 Portland St., Toronto, Ont.

GET THE OUTS

AMERICA'S NEWEST SLOGAN

GUMOUT

Cleans Carburetors

eliminates water ...

dissolves harmful gums

IS YOUR
NEWEST
MONEYMAKER

NOTHING LIKE IT !

by virtue of its emering new Q-Solve Gument is utterly different from any other product added to motor fuels o ells. Write for Laboratory Test Report

"GET THE GUM OUT!"

America's newest slogan introduces your newest moneymaker, GUMOUT! There's nothing like it anywhere! For GUMOUT, with its exclusive new Q-Solvent, completely dissolves the gum in the carburetor and fuel system, restoring engine pep and power in just ten minutes! One pint of GUMOUT does the job. Then a pint every 1000 miles keeps the gum out! Yes, there's nothing like GUMOUT! And nothing like GUMOUT'S great new merchandising program, with its practical, down-to-earth approach to your selling problems! So get going with GUMOUT! Get full details from your jobber, or write

PENNSYLVANIA REFINING COMPANY, GUMOUT Division A, Cleveland 4, Ohio.

REFINERS OF



PETROLEUM PRODUCTS SINCE 1870

STANDARD FOR THE AUTOMOTIVE TRADE



Insist upon Kester Flux-Core Solders from your jobber. The "boys back shop" will do their work faster and more efficiently using Kester Solders with their superior fluxing action. Be assured of repeat business with complete customer satisfaction. Use Acid-Core for general work, Plastic Rosin-Core for electrical and radio work.

R/x Prescription For Good Soldering

The tin-lead content of Kester Acid-Core Solder was established many years ago by you, the trade, as the alloy that would give the best results. Do not accept substitutes.

KESTER SOLDER COMPANY

4201 Wrightwood Avenue, Chicago 39, Illinois

Factories Also At

Newark, New Jersey . Brantford, Canada



Studebaker Adopts B-W Transmission

Continued from Page 69

"N"-Neutral.

"F"-Forward (high range).

Starting in second gear with torque converter and automatially shifting into direct. Shift speed change is determined by amount of throttle opening.

"L"-Low range.

Starting in low gear with torque converter and shifting no higher unless the manual shift lever is moved to "F" (forward range). This range also is used for engine braking and can be secured by shifting manually up to 50 MPH under all conditions, providing the car is in forward motion.

"R"-Reverse.

The engine can be started only when the manual shift lever is in "P" or "N" positions. No auxiliary oil cooler is necessary.



"Can you repair a leaking roof?"

K-F Reports Loss For First Quarter

Kaiser-Frazer Corp. reports a loss of \$5,805,298 for the first quarter of 1949. The loss compares with a profit of \$2.288 million for the first quarter of 1948. Edgar F. Kaiser, president, said the loss resulted from reduced prices on its cars and changeover costs for new models. He revealed that the price cut ranging from \$198 to \$333 in March cost K-F approximately \$4.1 million in dealer refunds.



This smart new line of ARO Portable Lubricators means business and profits for you—with faster, better lube service! Just what you need if you buy lubricants in containers of 50 lb. or less... if your lube business requires extra capacity for rush hours... or if you need a separate service department.

Aro units for chassis and gear lubrication, oil drain, spring packing and gun filling make these operations fast and convenient. Their efficiency rates with the highest Aro standards of performance... with long-

life dependability. See your Aro Jobber! The Aro Equipment Corporation, Bryan, Ohio.

• USE FOR REGULAR SERVICE

- USE FOR RUSH HOURS
- USE FOR A SEPARATE SERVICE DEPARTMENT

ARO

LUBRICATING EQUIPMENT
ALSO...AIR TOOLS...HYDRAULIC EQUIPMENT
AIRCRAFT PRODUCTS... GREASE FITTINGS

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FULL LINE TO MEET YOUR REQUIREMENTS

THE ARO EQUIPMENT CORP., Bryan, Ohio

Send us your new catalog with complete information on ARO Portable Lubricators and ARO Nozzles and Adapters.

Name

Address....

99

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F. reits new rice

\$4.1

1949

Indianapolis

Continued from page 43

miles. These records are broken, only because the cars have adopted new and better suspensions which, in turn, enable them to make the turns faster. But one of the most significant records, was hung up this year by Jackson and Mantzthe first drivers to run the entire race non-stop.

The identical Novi Mobil Spe-

cials driven by Duke Nalon and Rex Mays suffered the fate of most prerace favorites and were dogged by hard luck. They have front wheel drive with a V-8 super-charged engine, 183 cubic inches, developing 550 hp. at 8000 r.p.m.'s.

The cars were improved on over last year by installing a larger gas tank (115 gallons). Scintilla magneto in conjunction with a special distributor manufactured by Winfield Engineering, forged I-beam connecting rods, copper bed inserts in both main and rod bearings and a larger radiator with improved air flow for better cooling.

The chassis used torsion bar suspension on the front and semi-elliptic on the rear.

Norm Olson's car-This car was also a newcomer for this year's race. The car was built by Olson in $6\frac{1}{2}$ months at a cost of \$25,000. The chassis and suspension was copied from the Italian Maserati. The frame is of the box type construction with reinforced flanges on top and bottom. The rear of the frame kicks down instead of up, as used on most other racers. The car is exceptionally low, having only four inches clearance between the bottom of the car and track.

oth

Be "S

A combination of friction and hydraulic shock absorbers are used. Dual master cylinders-one for the front brakes and one for the rear. Brake drum diameter, 12 inches.

The body is his own design, made out of aluminum. The differential is a quick change section rear. Transmission is a rebuilt Model A Ford. Wheel base 101 inches. The car is powered with a 270 cu. in. Meyer Drake engine. (Pix-Axle, Front suspension, Rear suspension, Chassis).

The Blue Crown Specials that Mauri Rose and Bill Holland drove are the same cars that were used last year. As usual, Lou Moore had these cars in tip-top condition. They are a front wheel drive powered with 270 cu. in. Meyer Drake engines, having a rated hp. of 325 at (Continued on page 120)



"Just help yourself!"

Put Your Money on the lhermoid BELTS First in favor because Thermoid Fan Belts are "a horse of a different color" and merchandised with "sell-on-sight" display racks. Is it any wonder more dealers make more money with Thermoid? No stretch—no slip—no wear—no fail, Thermoid Pre-Stretched Fan Belts stay the correct size. The Thermoid Line Brake Linings • Clutch Facings • Fan Belts

> Radiator Hose • Hydraulic Brake Parts and Fluid Car Mats . Thermoid Precision Process Equipment Complete Brake Service Departments Thermoid Company, Trenton, New Jersey

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1949

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BIG, TIMELY 2-COLOR ADS

Car owners everywhere will read about the need for Purolator in Summer issues of the SATURDAY EVENING POST, LIFE, TIME, COUNTRY GENTLEMAN and three other widely read consumer magazines. Be sure you tie in with this powerful "Summer-timed" promotion for greater filter sales and profital

LOOK AT PUROLATOR'S SPECIAL PROMOTION TO BOOST YOUR FILTER PROFITS!



THE "FILTER STORY" FOR MOTORISTS

Attractive, sales-arousing folder to make motorists *filter-conscious*. Send them to *your* customers!



SALES-BUILDING WINDOW STREAMER

Colorful, eye-catching sales message . . . designed to help boost Purolator at the point-of-sale!



SALES-STIMULATING RADIO SCRIPTS

Keyed to Summer listeners
for you to use in your
local radio advertising
selling car owners on the
need for filter changes
this Summer!



HARD-SELLING NEWSPAPER MATS

To sell motorists locally on the Summer reasons for a Purolator check-up and replacement!



CUSTOMER-CATCHING ELECTRIC DEALER SIGN

Colorful "stopper" that tells motorists you have the Purolator Oil Filter they're looking for!

To eash in on Purolator's big selling job for you . . . GET YOUR PUROLATOR SELLING AIDS AND USE THEM WISELY!

More Summer driving plus more Summer dust brings extra need for an efficient oil filter if motorists want to avoid costly engine repairs. Tell this powerful sales story to your customers . . . use Purolator's "Summertimed" sales aids . . . keep a good supply of Purolator Refills on hand. Then—watch your filter sales soar!

PUROLATOR PRODUCTS INC. Newark 2, New Jersey and Windsor, Ontario, Canada



COMPLETE STORY ON SUMMER DRIVE

Big 2-color broadside with full details on Puroletor's Promotion to boost your Summer sales!

PUR LATOR
MICRONIC OIL FILTER
FILTER OF FILTERINGS

Indianapolis

• Continued from page 118

5000 r.p.m. Gas mileage on these cars is exceptionally good—they average about 12 miles per gallon with a compression ratio of approximately $14\frac{1}{2}$ to 1. Front brakes on these cars are located against the differential housing.

The third entry called Blue Crown Spark Plug Special, Jr., which George Connor drove, has the same type engine as the other two but has a rear drive with trans-

verse springing. Two sets of shocks are used, friction and hydraulic. Front suspension is torsion bar.

N. J. Round's had one of the most interesting cars entered in the race, a rear-engine job. It was built by Emil Diedt and Luigi Lesovsky, in California.

This car has a tubular frame with torsion bar, independent suspension on all four wheels.

The car is extremely low with a

well proportioned and streamlined body. The driver is seated at the front and engine in rear. The radiator is also on the front with pipes leading to the engine. Fuel tank has a capacity of 55 gallons and a 12-gallon oil tank.

Kurtis Kraft—The Kurtis Kraft, second place winner, driven by Johnny Parson, was powered by a 270 cu. in. Meyer Drake engine. The suspension is torsion bar installed on the lower part of the frame with arms attached to the lower and forward section of the outer bearing cage.

The stationary ends of the front and rear torsion bars have adjusting arms which allow the car to be balanced. The engine is suspended at four points on Lord mounts—this eliminates a great deal of high frequency vibration, which is often the cause of frame and body fractures.

A Firestone gas tank with a 62-gallon capacity was used.

The rear axle is the conventional straight through type instead of the DeDion that was used in last year's race.

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The two Maseratis entered by a group of Indianapolis business men were driven by Lee Wallard and Freddie Agabashan. Wallard's car was the one driven by the late Ted Horn last year. Agasbashan's was purchased in Argentina by the late Cotton Henning. They have front torsion bar suspension, independently sprung. Brakes on these jobs are unusually large as they were designed for road racing in Europe. The engines are 8-cylinder supercharged.

The six-wheel car, entered by Pat Clancy and driven by Jackie Holmes, was not a newcomer this year. A number of improvements were made based on experience they gained in last year's race.

The four-wheel drive allows a greater portion of power to be transmitted to the race track, with the result of higher average speeds. The drive arrangement on this model has one propeller shaft going to the forward axle and then a shorter propeller shaft following to the rear axle. Rear suspension is through quarter elliptic springs in the rear and transverse in the

(Continued on page 124)

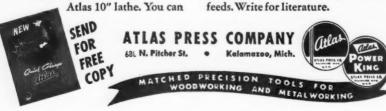
Speed Work ... Boost Profits With an *Atlas* 10" LATHE



It's no work at all to grind valves on the Atlas 10" lathe. You simply clamp the valve stem in a Jacobs chuck and finish the valve face with the Atlas grinding attachment. The entire operation takes only a minute a valve.

Valve grinding is just one of 44 different automotive parts repair jobs you can do in your own shop with an

grind bushings, valves, pins; recondition armatures, wind coils, cut gears. You speed up your service and keep all repair profits instead of splitting them with outside machining sources. Ask your jobber for full particulars, including details about the new Atlas "Quick-Change" 10" lathe that gives you instant selection of 54 threads or feeds. Write for literature.



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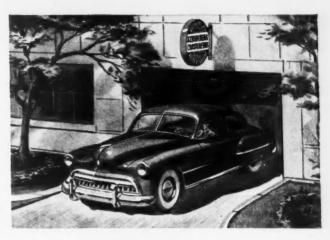
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1949

from the first mile



STROMBERG

CARBURETORS

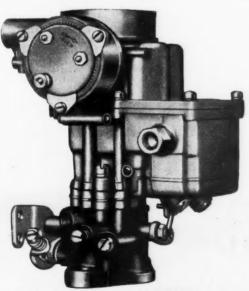
build lasting good will

Customers quickly notice the increased performance and lowered operating costs that result whenever you install a Stromberg* carburetor.

Their appreciation of your service continues to grow, as the built-in efficiency of the Stromberg carburetor delivers mile after mile of peak performance.

Today, motorists are more value conscious than ever. That's why it's good business to sell only the best in carburetion. That's why it pays to sell Stromberg, the quality carburetor for over forty years.

*REG. U.S. PAT. OFF.



The Stromberg Carburetor Model BXOV-25 with electric automatic choke control



STROMBERG DEALERS ENJOY THESE ADVANTAGES—

- A product name that is known and respected by the trade and public alike.
- A line that is profitable to handle.
- A carburetor that is right from the first mile to the last mile.
- Customer good will that is sure to benefit your business as a whole.
- A carburetor that is essentially simpler in design—has fewer parts, is easier to work on, more economical to overhaul.

BENDIX PRODUCTS DIVISION of



Service Sales: South Bend, Ind. Standard Equipment Sales: Elmira, N. Y.

It's later than you

Less than 100 days to the start of another anti-freeze season

And what a season that's going to be! For the first time in years, the buyer is king. The dealer who wants the business will have to get in early with the popular brands.

O.K.—but what's the rush? Simply this: no anti-freeze manufacturer, and no jobber, can deliver your requirements and those of other dealers if all wait until the last minute. The dealer who puts off ordering may miss the profitable first-fill business entirely.

There will be more anti-freeze on the market next fall—and that means a scramble for the motorist's anti-freeze dollar. If you don't get your customers lined up early, some other dealer may.

Don't take a chance. Take advantage of the fact that your wholesaler can give you quick delivery of "Zerone" and "Zerex" NOW!

With this TEAM you can meet the needs of all types of customers

With "Zerex" you'll be able to take care of the customer who wants to put in his anti-freeze once and forget it. It is the one-shot anti-freeze developed by Du Pont research for people who demand the best—and are willing to pay a little more for the satisfaction of having it.

With "Zerone" you can meet the needs of the car-owner who wants good safe protection—and who wants to SAVE MONEY in the bargain (and there will be plenty more people like *that* this fall).

*Reg. U. S. Pat. Off.



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

think

IN THE ANTI-FREEZE BUSINESS!

More motorists buy Du Pont "ZERONE" than buy any other anti-freeze — regardless of price

HERE'S WHY IT'S THE GREATEST VALUE YOU CAN OFFER YOUR CUSTOMERS...

- 1. Saves money. Protection costs less with "Zerone." It's not only low in price, but it's more efficient. Three quarts of "Zerone" do the work of four quarts of most other types of anti-freeze.
- 2. Four out of five cars can use it. 70% to 80% of all cars on the road have low-opening thermostats and operate at temperatures well below the boiling point of "Zerone" solutions. You can safely recommend "Zerone" for protection in such cars down to -30°F.
- 3. No evaporation problem. "Zerone" does not readily separate from water in an automobile cooling system. Losses, if any, come from the usual mechanical causes—leaky gaskets and pumps, or other defects.
- 4. Special CHEMICAL inhibitor. The patented chemical inhibitor in "Zerone" is a development of Du Pont research chemists. Hundreds of practical road tests and service in millions of cars prove it gives longer-lasting protection against acid, rust, and corrosion. It won't attack rubber hose or clog cooling systems.
- 5. No objectionable odor. This "Zerone" feature has helped make it popular ever since it was introduced 16 years ago.
- Made by Du Pont. The Du Pont trade-mark is a symbol of quality to thousands of car-owners. They have confidence in, and readily accept, products bearing this name.





Design-craftsmanship-service

are the "Big 3" of Quality performance. And ONLY with Sure-Fit Auto Seat Covers can you be sure that you are creating maximum sales and good will-now and for the future—because only Sure-Fit gives you seat covers with the outstanding performance assured by the right combination of:

DESIGN

from exclusive styling to smooth, permanent fit.

CRAFTSMANSHIP

latest techniques that mean long wear, neatness, simplified installation, reduction in seam wear and greater comfort for user.

SERVICE

and satisfaction established by the fact that more Howard Zink seat covers have been produced than any other brand

It Pays to be Associated with the Leader



Indianapolis

Continued from page 120

front. Braking is on all six wheels. This car also is equipped with a 270 cu. in. Meyer Drake engine.

The Belanger cars, driven by Ralph Pratt and Duane Carter used a new fuel supply arrangement, developed by Murrel Belanger. The system employs two Titan fuel pumps mounted on the timing gear cover and driven off the camshaft. One of the pumps supplies fuel to the two horizontal carburetors. while the other acts as a scavenger. The scavenger pump is connected to a tube in each carburetor with its open end at the desired fuel level. This eliminates the float. Both cars are rear drives and powered with a 268 cu. in. Meyer Drake engine.

Jimmy Jackson's car, one of the sleekest looking cars on the track, is a front wheel drive, powered with a 270 cu. in. Meyer Drake engine. When testing and qualifying this car it was equipped with fuel injection instead of a carburetor. The fuel is sent directly into the intake ports under pressure. This method after being improved upon may be adapted to pleasure cars in the near future.

However, due to mechanical troubles with the pumps they thought it advisable to change back to the regular carburation for the



"Dolores learned how to make Zombies in Domestic Science today!

Certain highly-desirable Sure-Fit Dealer

franchises still are

available. For complete

information write,

wire, phone or ask for a Sure-Fit representa-

tive to introduce you

to the "Sure Profit"

line of seat covers!



MAKE MORE MONEY THE M-S WAY BY

Eight Quick Reasons to Switch to Martin-Senour **Hi-Solids Lacquers and Synthol Enamels**

Higher painting profits

20

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1949

- Exact color match to car-maker's specifications
- Top quality, top durability, top beauty
- No time wasted mixing or matching
- Patented pour-top can prevents waste
- No come-backs, no headaches
- Easier to handle . . . jobs out on time
- Available everywhere... call your N.A. P.A. jobber





Painting More Cars Faster!

Now Brother Grant has time to perfect his swing on the local links. That's because he learned how to cut labor costs, eliminate mixing time and boost painting profits with ready-mixed Martin-Senour finishes. His shop paints more cars faster than any other place in town! And every job is right the first time because M-S finishes are

factory-matched to the car maker's own specifications. Just check the color, make and model in the handy M-S catalog, then phone your N.A.P.A. jobber. Start profiting from the M-S way today. Call your N.A.P.A. jobber now!

2520 South Quarry Street, Chicago 8, Illinois

Factory Packaging

is the only Positive Control from Factory to Finisher

New Products Continued from Page 60

327

Spencer Specialties, of Beverly Hills, Calif., is marketing a new shim brass dispenser, designed to provide a dependable source of supply and to keep shim brass handy and easily accessible. This dispenser accommodates two rolls of shim brass. It comes free of charge with the purchase of two

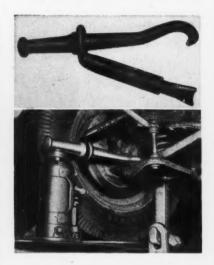
5 ft. rolls of 5-inch wide shim brass in protective metal cylinders. Available gauges are .001 and .002.

328

The BMC Manufacturing Co., Binghamton, N. Y., is marketing a trouble light which is designed to be plugged into the cigarette lighter socket, for emergency use and general night time convenience. Called the Ready Ray Trouble Light, this accessory has a 21 candle-power bulb with a polished reflector. The light is enclosed in a steel case which opens to form a stand. Twelve feet of cord are supplied with the light.

329

The Bear Manufacturing Co., Rock Island, Ill., announce a new Caster Corrector for knee action



cars. The new tool has an adjustable shank with a special screw-in head to make it adaptable for many jobs. It is used in conjunction with a hydraulic jack.

330

Champ-Items, Inc., St. Louis, announces the manufacture of a replacement assembly for mechanical gear shifting to replace vacuum system on 1940-48 Chevrolet cars. This mechanical gear shift assembly can be installed in 20 minutes, according to the manufacturer. It is packed complete with installation instructions.

331

The Baldor Electric Company, St. Louis, Missouri, announces development of an improved air circulator. This unit is available in floor column type, counter column type, or ceiling suspension type. Each type consists of a 24 inch fan blade powered with a ¼ hp., 2 speed motor, 1100/800 r.p.m. The unit is resilient mounted to minimize noise.

(Continued on page 130)



INDUSTRY INDUSTRY TOOLS OF THE COMPLETE WIL 11 11 11 11 11 11 See it today at your Williams Distributor FORTY-FIVE SQUARE FEET OF BIG-VALUE TOOLS IN ONE DISPLAY These panels display the complete Williams line of Automotive tools...arranged for quick selection. Choose the tool or tool combination for your particular needs. H. WILLIAMS & CO., AUTOMOTIVE DIVISION, BUFFALO 7, NEW YORK

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WALKER PRESENTS

America's greatest hydraulic service jacks





Revolutionary new I.S.D. Power Cylinder—I.S.D. means "increased surface density" a revolutionary new finish for the inside surface of the seamless carbon steel power cylinder. It is not just a polish or a burnish, but an actual scientific densification of the surface structure of the metal to provide a "micro-smooth" finish with greater wear resistance and a more positive seal between the cylinder wall and the cup leather.



New Self-Centering "Finger-Tip"
Control—Greater ease of control is
engineered into the new "Gold Seal"
power unit by an ingenious new selfcentering control mechanism which
prevents valve seat wear and eccentric
binding. This new "finger-tip" control
permits positive closing without undue
effort and provides a more accurate
control of lowering. It adds ease, comfort and safety to Greyhound operation.

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WALKER MANUFACTURING COMPANY OF WISCONSIN · RACINE, WISCONSIN



NEW PERFORMANCE...NEW EASE OF OPERATION...LONGER, MORE TROUBLE-FREE LIFT

This is one of the most important messages in the history of service jacks. It is the story behind the new DELUXE WALKER GREYHOUNDS and the new "GOLD SEAL" power unit:

Because the true value of any service jack is determined by the performance of its hydraulic power unit, Walker engineers focused their attention upon refining and developing to still higher standards of efficiency the already famous Walker Greyhound power mechanism.

They started over from the beginning...examining and re-examining those things which are primary in proper jack operation—protective features which preserve fine performance—which add longer trouble-free life...greater safety...smoother, easier lifting...and more positive control. They researched the entire field of hydraulics with their minds open—searching for the

perfect answers. Then was created the new Walker "Gold Seal" power unit, the finest hydraulic power mechanism for service jacks ever developed—as the heart of the new DeLuxe Walker Greyhounds!

Here are two new jacks that surpass all previous standards... in superb performance... in progressive engineering... in beauty and color and streamlined showmanship. Here are the service jacks of tomorrow—destined to become the "yardstick" of all jack performance... with an extra margin of strength for the unexpected... an extra margin of safety for greater protection... an extra margin of power when emergency calls.

The new DeLuxe Walker Greyhounds with the new "Gold Seal" power unit represent the finest combination of service jack values a dollar can buy!

Also available — the new DeLuxe Walker Whippet No. 867 with the "Blue Seal" power unit — 3000 lbs. Capacity

... FOR SERVICE JACKS EVER DEVELOPED

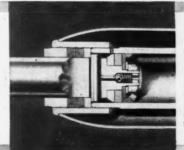


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"Tolerance .0015" Precision Ground Reciprocating Parts—Internal wear from reciprocating parts which must pass through glands is reduced to a minimum in the "Gold Seal" unit through precision centerless grinding of these parts to a tolerance of .0015". Balls, ball seats, screws and valves, packings and cup leathers all receive special attention to assure long, trouble-free life.



New Filtered "Hydra-Matic" Relief Valve—In the new "Gold Seal" unit the intake port of the famous "Hydra-Matic" relief valve is covered with fine screen to filter out foreign material which might prevent its proper operation. The "Hydra-Matic" valve, one of the most far reaching developments in modern hydraulic jack construction, eliminates cup washer scoring—one of the most frequent causes of jack failure.

Also Makers of WALKER SILENCERS, LIFTS AND OIL FILTERS

MOTOR AGE, June, 1949

129

The Cristy Chemical Corp. of Worcester, Mass., have added the new Cristy oil-resistant Service Shoe to its line. These shoes are chemically treated to resist oil, grease, heat, acids, caustics and gasoline. They feature Gro-Cord, Neoprene soles. Made of the same material that lines gasoline hose, Neoprene soles are not affected by oil, grease, excessive heat, and tough wear. Cristy Service Shoes get their non-skidding feature from a Multi-Angle Cord Construction imbedded in the shoe sole. Hundreds of cords are placed at many different angles right through the sole to guarantee a non-slip surface.

Just off the Press!

J. H. Williams and Co., Buffalo, N. Y., announces a new ratchet adapter, with which ratchet action is said to be possible in ex-



tremely limited quarters. It can be used with any of the 1/2-inch square drive handles or attachments to convert it to a ratchet tool. The adapter is 29/16 inches in length and 11/4 inches in diam-

224

The Independent Pneumatic Tool Co., Aurora, Ill., announce their "99" valve refacer, a model of the Thor refacer line, designed for precision, wet grinding.

The new Thor "99" refacer is equipped with a double-grip collet and new speed chuck for precision valve refacing at all standard angles. Sliding heads feature smoothriding three-point suspension on hardened and ground slide rods. The double-grip collet is hardened, ground and internally lapped.

(Continued on page 132)







HOMESTEAD VALVE MANUFACTURING COMPANY eving Since 1892"

CORAOPOLIS, PENNSYLVANIA

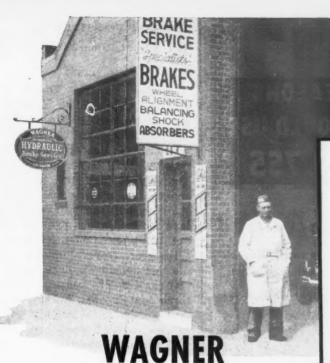
You can do up to \$10,000 more

And you'll add many more hundreds of dollars a year to your income in time

P. O. BOX 95

business a year on cooling system cleaning alone with combination Service Master and Steam Thoro-Purge*.

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WAGNER ADVERTISING in POST and COLLIER'S helps direct business to YOU!

Wagner is by far the best-known name in brake service from coast to coast. You can build business by featuring Wagner service, and take advantage of Post and Collier's advertising to help merchandise the safety of better brakes. 27 million Wagner ads a year in these two most-read national magazines reach customers and potential customers in your area as well as motorists throughout the country.

See your wholesaler for complete details about tying in with Wagner's "3-R's Program"!

REFILL with WAGNER LOCKHEED HYDRAULIC BRAKE FLUID

An all-season fluid that functions perfectly under all atmospheric temperatures. Genuine Wagner Lockheed Hydraulic Brake Fluid is used by car and truck manufacturers and recommended for all hydraulic brakes.

RELINE with WAGNER COMAX BRAKE LINING

Designed, manufactured and thoroughly tested to insure more quick, safe, smooth stops per lining. Complete coverage for all your needs...in sets, rolls, blocks, slabs or cut segments. Available everywhere through Wagner wholesalers.

REPAIR with WAGNER LOCKHEED HYDRAULIC BRAKE PARTS

Genuine Parts by Wagner—pioneer manufacturer of original Wagner Lockheed hydraulic brakes—assure perfect fit, dependable performance and customer satisfaction. Your customers know and accept Wagner's reputation for quality products.

T PAYS TO SELL THE BEST-KNOWN NAME
...IN BRAKE SERVICE IT'S WAGNER!

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Wagner Electric Corporation

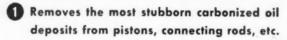
6498 PLYMOUTH AVENUE, ST. LOUIS 14, MO., U.S.A.

AGNER 3-R's HELP MAKE SAFER CARS AN YOU 570P IN TIME? For Safety's Sake.. *REFILL with WAGNER LOCKHEED HYDRAULIC BRAKE FLUID Bring the fluid in the master cylinder up to proper level with this all-season fluid. It functions under all driving temperatures. Used by cer, truck, and bus manufacturers. REPAIR with WAGNER LOCKHEED HYDRAULIC BRAKE PARTS Restore new car performance with these quality replacements. Perfect fit, dependable performance assure you greater safety. RELINE with WAGNER COMMEN BRAKE LINING Unsurpassed for quick, safe, smooth stops. Relax with CoMaXI here's a Wagner authorized service shop near you. If you don't know where write us. Wagner Electric Corporation, 6400 Plymouth Avenue, St. Louia 14, Mo., U.S.A. (In Canada: Wagner Beake Company Linked Towns WE

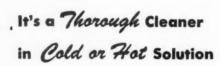
YOU CAN DEPEND UPON WAGNER QUALITY BECAUSE... WAGNER PROD-UCTS ARE USED AS ORIGINAL EQUIP-MENT BY AUTOMOBILE MANUFACTURERS.

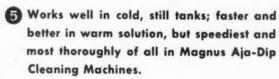


It's a Multi-Purpose Cleaner



- Cleans carburetors, oil, fuel and water pumps quickly and thoroughly without hand work.
- Cleans all other dismantled engine parts.
- 1 Desludges engines without dismantling.





It's a Lasting Cleaner

6 When other cleaners of this type are exhausted, Magnus 755 solutions are still going strong, with months of service life remaining.

It's a Safe Cleaner

Non-toxic, non-corrosive. Safe for all metals, and harmless to gaskets and packing.

Desludging of engines without dismantling is a Magnus 755 application that sets up mighty attractive profits for you. The three other uses will cut your servicing costs PLENTY! YOU should try 755!

MAGNUS CHEMICAL COMPANY • 174 South Ave., Garwood, N. J.
In Canada—Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que.

Service representatives in principal cities



New Products

Continued from Page 130

335

Stanley Electric Tools. New Britain, Connecticut, announces the new No. 24A 1/4" Electric Drill, designed for production work wherever a light-weight, smallsize 1/4" Drill is required. Built for drilling in metal, wood and composition materials, it is said that the drill can be used at full load for continuous drilling without stalling. Construction features are: strong aluminum alloy die cast housing, helical gears, oil impregnated bronze bearings, three jaw Jacobs Chuck, Trigger type switch with locking device, rubber covered cord-three wire with ground connection.

336

The Plomb Tool Company, Los Angeles, Calif., announces a new trade-mark design, featuring the brand name, "PROTO." "PROTO"



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MC

was adopted early in 1948 and the new over-all design was developed as a means of speeding recognition and remembrance of the trademark by hand tool users. It will be used extensively for catalog and other literature, as well as for decals, signs, display boards and other point-of-sale materials.

337

The K-D Manufacturing Co., Lancaster, Pa., announces a new door handle spring remover. This tool is designed for use in removing the horseshoe retaining springs on interior door handles of General Motors cars. Toothed jaws grasp the spring and pull it out. According to the manufacturer, there is no danger of flying springs or marred upholstery. The tool is of all-steel construction with tempered jaws, and is said to be thin enough to reach after the springs and yet strong enough to withstand normal operating pressure on the handles.

(Continued on page 140)

VITRIFICATION PUTS MORE PROFITS IN CAR POLISHING!



Cuts Job Time in Half—a 3-in-1 operatic..? Ordinary polishing methods require two steps after washing. Vitri-Glaze requires only one! It contains no wax yet produces a finish that doesn't require a final wax coating. Result: you do the job in half the time—make more profits. Vitri-Glaze is easy to use, while it takes an expert to do a waxing job without caking and streaking.

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, 1949

Brilliant, Lasting, New-Car Finish Wins Customers! Car-owners go for the brandnew lustre produced by Vitri-Glaze. This smooth, glazed finish that keeps sparkling through months of driving is sure to ring up plenty of sales for you. The power and speed of Black & Decker Polishers and the amazing elements of Vitri-Glaze turn the trick. Millions of motorists will soon be familiar with this better, faster, easier

polishing method. Tie in now, cash in now on this great opportunity!

Cleans, Polishes, Seals in ONE Easy Operation! Vitri-Glaze dissolves road seum, grease, etc. Cleans through gentle abrasive action; removes dead pigment but does not cut into "live" paint. Burnishes the clean finish through Polisher's buffing action. Seals car's surface against road scum, excessive weathering.

Black & Decker Polishers Improved for Better, Faster Work! Get all the revolutionary advantages of improved Black & Decker Polishers—30% more power; the best spindle speed for fast work, brilliant finish; balance improved for minimum operator fatigue. And only Black & Decker offers you an AUTO-MATIC POLISHER, to speed up your jobs through automatic polish feed.



See Your Nearby Black & Decker Distributor for a free demonstration of the Vitri-Glaze Method and new Black & Decker Electric Polishers. Write for detailed booklet to: The Black & Decker Mfg. Co., 627 Pennsylvania Ave., Towson 4, Md.



PORTABLE ELECTRIC TOOLS

SEND FOR SENSATIONAL MERCHANDISING KITI

ONLY \$3.75 Here's a red-hot offer that will help you sell Vitri-Glaze! Colorful banner, five mechanics' caps, two newspaper ad mats, 100 mailing folders are yours for only \$3.75. Send check or money order with letter or coupon below! (This offer good in U. S. A. only.)

The Black & Decker Mfg. Co., 627 Pennsylvania Ave., Towson 4, Md.

Please rush me your Vitri-Glaze merchandising kit. I enclose.....check.....money order for \$3.75.

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MOTOR AGE, June, 1949

133

"THEY NEVER MISS

by Gum

WHY, OH, WHY IS IT THAT THE FIRST CUSTOMER IN THE MORNING ...



CARRIES NOTHING SMALLER THAN A TWENTY DOLLAR BILL?



INL plu Vo

There's more money with Hi-level

PLAN NOW to check the exclusive advantages offered by the Prest-O-Lite Profit Plan. Find out how the sensational Prest-O-Lite Hi-Level Battery helps win friends, boost sales and profits on every service and product you sell. Learn about the dramatic, attentionpacked advertisements magazines carry to over 18,000,000 homes. Then add the famous Prest-O-Lite sales stimulators and point-of-sale helps. It's the greatest campaign in Prest-O-Lite history. Talk now to your jobber's salesman, or write to

PREST-O-LITE BATTERY COMPANY, INC.

vel batte



*In normal car use.

YOU ARE THE BOSS

with the new INLAND franchise!







YOU MAKE MORE MONEY WITH INLAND'S NEW VOLUME BONUS! Large and small Inland dealers alike earn plus profits under the new Dealers' Volume Bonus Franchise...now more valuable than ever for independent dealers who want to be their own Boss.

YOU SELL ONE OF THE FINEST TIRES ON THE ROAD! Inlands make friends and build repeat business for you. Engineered for mileage . . . with the extra stamina to deliver thousands of troublefree miles at the lowest possible cost per mile.

YOU SELL TIRES MADE OF NEW CO-RUBBER! Here's real selling ammunition. All Inland passenger tires now made with Cold Rubber. The sensational, long-life rubber that gives every customer an amazing "mileage bonus."



YOU GIVE A WRITTEN WARRANTY! Another profit-building, competitive advantage for Inland dealers. Every Inland is backed up by a full-coverage Written Warranty against all road hazards. Simple, easy to issue . . . it keeps customers satisfied even if any thing should happen to their tires.



YOU ARE THE BOSS ON ADJUST-MENTS! You make on-the-spot adjustments that keep you off "the spot." They cost you nothing and keep your customers happy with prompt no-questions-asked service! No delay. No red tape. Your decision is final.



HERE'S HOW TO GET STARTED MAKING MONEY WITH INLANDS

CALL YOUR AUTOMOTIVE DISTRIBUTOR OR MAIL THIS COUPON—NOW

INLAND RUBBER CORPORATION

A subsidiary of Minnesota Mining and Manufacturing Company

TIRES AND TUBES . TIRE AND TUBE REPAIR EQUIPMENT AND MATERIALS . RADIATOR HOSE . FRICTION TAPE . APPEARANCE PRODUCTS

INLAND	INLAND	RUBBER	CORP	ORAT	ION
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146 W. 27th Street, Dept. M-46, Chicago 16, Illinois Send me complete details about the new Inland Franchise opportunity:

City......Zone.....State......

49

MORE FUEL LINES ...IN LESS TIME!



WEATHERHEAD'S NEW "SHELF MASTER" MERCHANDISER H-275

Designed to increase your fuel line sales, the "Shelf Master" includes 275 Weatherhead flexible fuel lines for any make car, truck or tractor. The thin but durable metal partitions of the "Shelf Master" will hold 450 Lines. This neat,

efficient merchandiser keeps your fuel line assortment neatly filed for quick-selling, with the contents of each box clearly indicated. The "Shelf Master" is a handsome display that reminds, sells, and helps control inventories.

See Your Jobber Today—Ask About Weatherhead's New "Shelf Master" H-275

TWO MORE VOLUME-BUILDING MERCHANDISERS



The FF-94 Farm and Field Merchandiser contains 229 fittings and 10 feet of hose. Balanced assortment of sizes and types. The "Dee Cee" dash control assortment D24. Contains 24 dash controls in all popular types and colors . . . complete with conduit and wire.



Weatherhead With Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO

Plants: Cleveland, O. Angola, Ind. Columbia City, Ind. St. Thomas, Ontario, Can.

MOT

READ WHAT UCUT DID FOR THIS SHOP

"I have been in automotive electrical repair work for twenty-five years and have used engine lathes for armature turning purposes; also smaller armature lathes of various makes. I find the TRUCUT lathe and undercutter combination far superior in

I am sure I am saving half the time over the old quality, work, and speed. collet type lathe drive. The handy undercutter is an extra quick way because no time is lost moving

from one machine to another. The TRUCUT lathe has paid for itself many times. The one I am using is eight years old and I have spent less than one dollar a year for upkeep."

(Signed) Gunnar W. Wanngren Lundberg-Carlson Garage Minneapolis, Minnesota

TRUCUT ARMATURE LATHE AND UNDERCUTTER

CHECK AND COMPARE THESE FEATURES

Before You Buy — Be Sure It's Trucut All Our Products Bear the Trucut Label



- NO COSTLY ATTACHMENTS COMES COMPLETE
- NO MAINTENANCE PROBLEM
- DOES NOT REQUIRE TRAINED MACHINIST TO OPERATE
- NO TIME WASTED ON SPECIAL SET-UPS
- **ECONOMY OF SPACE**
- DOES A PERFECT JOB OF MACHINING AND UNDERCUTTING

WRITE FOR CATALOG 6 ML.

FRANK N. WOOD CO.

PACIFIC COAST ADDRESS 1330 W. OLYMPIC BLVD., LOS ANGELES 15, CALIF.



TRUCUT ARMATURE TESTER

An excellent meter type growler. Equipped with pair of Test Prods con-nected in a test light circuit to test for grounds; also meter and double meter prods to indicate open and short cir-cuits. 115 Volt, 60 Cycle Alternating Current. Shipping weight 15 lbs., di-mensions 131/4" x 7" x 61/2" high. Fin-ished in red. 0 to 30 Ampere Meter, Lamp furnished.

SOLD ONLY THROUGH JOBBERS

Steadily, increasingly, among more and more car builders,

The trend is to HEAD HEAD ALVE-IN-HEAD

—because Valve-in-Head provides greater all-round efficiency! and

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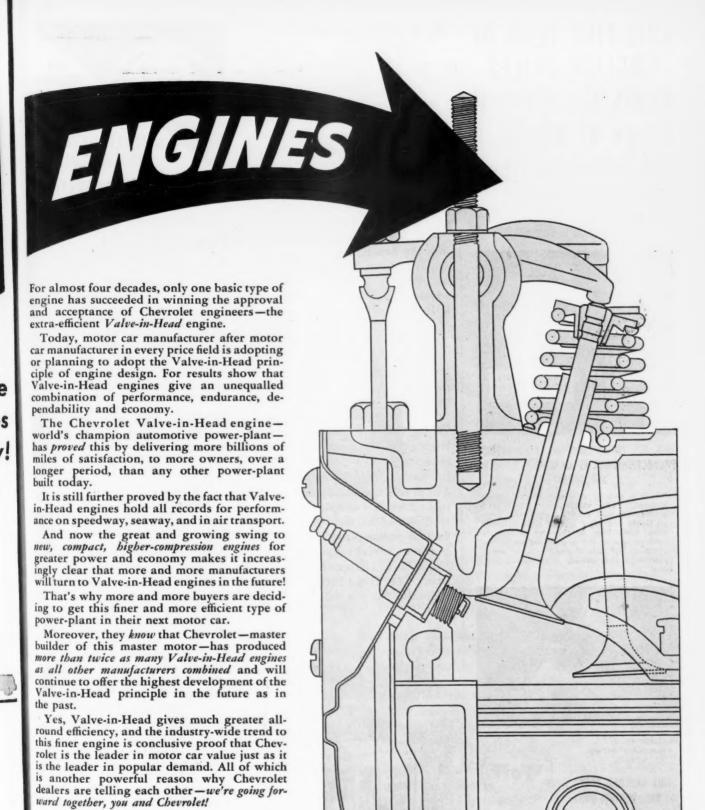
VALVE-IN-HEAD
MANUFACTURERS
1941

VALVE-IN-HEAD MANUFACTURERS 1947

VALVE-IN-HEAD MANUFACTURERS

The industry is paying tribute to Chevrolet by turning to this finer and more efficient type of engine—thoroughly proved and improved by Chevrolet engineers over a thirty-seven-year period—and now being adopted by builder after builder of motor cars, although it remains exclusive to Chevrolet in its price range!





CHEVROLET MOTOR DIVISION, General Motors Corporation
DETROIT 2, MICHIGAN



THIS FINE TEAM OF **ENGLISH DRILLS** meets the greatest range of needs in the industrial field!

THEIR ABILITY IS PROVED IN 50 WORLD MARKETS AND IS NOW WINNING RECOGNITION IN AMERICAN INDUSTRY



THIS 1/4" LIGHTWEIGHT ALL BALL BEARING PRODUCTION DRILL IS AMAZINGLY VERSATILE AND DURABLE!

This is a popular drill with aircraft manufacturers, body workers, shop-fitters and maintenance men. The low weight short overall length and offset spindle make this machine particularly suitable for drilling in the operator. The ratio of speed to power makes possible a wide variety of operations and



Available in N.Y.C. for immediate delivery. SD4C



being lightweight, is especially adaptable to many production jobs which require con-tinuous operation in close quarters. Spindle speed on full load 400 R.P.M. with 34" per minute penetration performance in steel.

S. WOLF & COMPANY LIMITED LONDON

Price and Distribution Particulars on request. Warehouse Stocks and Service Depot—New York City. Address inquiries to: U. S. Factory Representative, Fred L. Stuart, Room 808—110 East 42nd Street, New York 17, N. Y. LE 2-6176.

New Products

Continued from Page 132

338

Minneapolis Specialty Co., Minneapolis, Minn., announces its Wash-Master detergent injector. This unit is designed for use with the Wash-Master turbine brush. injecting detergent into the stream of water so that a car can be sudsed and rinsed without the use of a bucket. A needle valve feeds the correct amount of detergent into the brush, and the revolving center loosens the dirt. The injector has a capacity of 6 ounces which is said to wash from 8 to 12 cars.

339

The Barrett Equipment Co., St. Louis, Mo., announces a handpowered brake cylinder honing tool. The manufacturer states that cylinders can be honed on or off the car, and that the Hand-E-Hone produces a smooth finish by reason of a large area of abrasive in contact with the cylinder bore due to self-centering design. This tool comes in a complete set which is designed to recondition cylinders on passenger cars and trucks in the universal range of 34 in. to 15% in. bore. Larger sizes are available. The Hand-E-Hone is also adaptable for use with an electric drill.



"Nice of you to come along until I learn the route."



WELLS MFG. CORPORATION FOND DU LAC, WIS.

For SERVICE For SALES For PROFIT

Bank on Barton Automotive Chemicals. Years of Specialized Leadership. Many State and Local Dealerships Open.

WRITE BARTON PRODUCTS CO. 2765 ST. MARY'S CT., CHICAGO 47, ILL.





and DRAFTS IN OLD or NEW CARS. 1000 OTHER USES.

THE ORIGINAL SPONGE. RUBBER STRIP WITH PATENTED NO STRETCH FABRIC BACK.

DURKEE-ATWOOD CO.

irst for Comfort

HYDRAULIC TRUCK SEAT

BOSTROM MFG. CO. MILWAUKEE, WIS.

NEED A TOOL? PHONE YOUR JOBBER

ORDER NEW BRITAIN HAND TOOLS For Greater Strenath-Better Fit ON AUTOMOTIVE SERVICE JOBS

THE NEW BRITAIN MACHINE CO.

NEW BRITAIN, CONN.



One sale leads to another, when you sell a Durex Gasoline Filter-because you sell not only superior performance but extra qualities and advantages that win and hold your customer's satisfaction. For Durex has a filtering element that is all-metal-strong, effective, and permanent-and Durex combines high efficiency with low price and low costs for installation and maintenance.



Durex gasoline filters are dis-tributed nationally by United Motors Service. Order a supply from your local distributor.

- POSITIVE PROTECTION—The Durex porous metal filtering element passes nothing but clean fuel, keeps water and particles of lint, dust and scale from reaching the carburetor.
- QUICK INSTALLATION—The Durex unit fits readily into the fuel-feed line of cars, trucks and buses.
- EASY MAINTENANCE—The Durex metallic filter element never needs replacement; it's a matter of a few minutes to remove it and flush it clean.
- LOW-COST—Its price is low . . . its first cost is the last cost . . . it quickly pays for itself, then earns dividends in improved engine performance.

MORAINE PRODUCTS

DIVISION OF GENERAL MOTORS CORPORATION, DAYTON, OHIO

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Now! Needle Bearing Knees

We rebuild Knee Action units for Chevrolet '34-38 and Pontiac '34-36 with Needle Bearings which restore the soft resilient action equal to the thrill of new car comfort. The complete unit is given a guarantee equal to new. If your jobber

't supply you, write and give us his name.

VAN BERGEN & GREENER INC.

1619 N. Hayne Ave., Chicago 47, 111.

356 Venable N. W. 2727 Oak St. 2306 N. 15th St. ATLANTA KANSAS CITY PHILADELPHIA

NEW BRAKE DRUM LATHE \$31500 F.O.B.

A new bench type brake drum lathe is now available for small brake shops capable of turning all passenger car and light truck brake drums. For details

ASK YOUR JOBBER OR WRITE

LEMPCO

5490 Dunham Road, Bedford, Ohio



U.S. Pat. No. 2,093,547 — Canadian Pat. No. 223,568

INTERNATIONAL CHAIN & MFG. COMPANY YORK, PENNSYLVANIA

Personals.

Carl B. Dietrich has joined the staff of Motor and Equipment Wholesalers Association to handle publicity, membership, analysis of wholesaler problems, market research and related association activities.

Maury Boehm, formerly vice president and sales manager of J. A. Tumbler Laboratories, Inc. of Baltimore, Md., has recently become a manufacturers' representative. His territory consists of southern New Jersey, eastern Pennsylvania, Delaware, Maryland and the District of Columbia.

Mr. Louis A. Staff, 57, President of the Petroleum Solvents Corporation, New York, passed away suddenly at the Adolphus Hotel in Dallas, Texas. He had been on an extended business trip through the west, and was on his way back to New York when he stopped to visit a company branch office in Dallas.

M. L. VanDagens has been appointed as technical service manager of Plymouth Motor Corp. VanDagens has been associated with the automobile business since 1935, when he became a mechanic for a retail dealer. He joined the Chrysler Corporation in 1935.

Ned E. Holland, of Greenville, S. C., has been elected president of Virginias-Carolinas Automotive Wholesalers Assn. Bruce Cameron of Wilmington, N. C., was named secretary - treasurer and Larry Dunham of Greenville, S. C., vice-president.

Maurice Davier has become General Manager of the Van Cleef

Classified Advertisement

Newly forming sales organization with extensive following in the automobile trade in Metropolitan New York seeks items on an exclusive basis. Box 24, Motor Age, 5601 Chestnut Street, Philadelphia 39, Pa.

Division of Johns-Manville Corporation. Mr. Davier, formerly on the Johns-Manville general head-quarters executive staff at New York, came to Chicago as the liaison officer between Johns-Manville and Van Cleef Bros., Inc.



You Can Rely On FRENCHTOWN

INSULATORS

Used by more spark plug manufacturers than any other.

FRENCHTOWN PORCELAIN COMPANY 81 Muirhead Ave., Trenton, N. J. (Factory: Frenchtown, N. J.)

THE ANDREWS LINE ...

Your Best Electrical Connection

CUSTOMER SATISFACTION SINCE 1921





P

e



New 150-HP Packard Super Deluxe Touring Sedan—one of seven new models in the Packard Super and Super Deluxe series.

Presenting the distinguished new

Golden Anniversary PACKARDS

- v with 77 important new advancements)
- with more extras as standard equipment

at new LOWER PRICES!

New 135-HP Packard Eight Club Sedan—one of five models in the Packard Eight and Deluxe Eight series.

Just match the new, smaller price tags against the new, bigger packages—and then study the new *price ranges* with your eye on profitable *market coverage!* You'll know, then, why Packard dealers are calling these cars the "golden opportunity" line!

135-HP PACKARD EIGHT \$2224 to \$3449*

150-HP PACKARD SUPER \$2608 to \$4100*

160-HP PACKARD CUSTOM \$3750 to \$4295*

*Delivered in Detroit—state and local taxes, if any, and white sidewalls (\$21), extra.

Packard makes it a Golden Opportunity year for alert dealers

Packard today is in the strongest financial position—and the best production and sales position—of its entire 50-year history. We're ready now to move into a select group of prosperous new markets.

Want a share in this Golden Opportunity Program? Better act quickly! Telephone or wire direct to Karl M. Greiner, General Sales Manager, Packard Motor Car Co., Detroit 32, Mich., for the complete story.



New 160-HP Packard Custom Convertible—one of two new Custom creations—both standard-equipped with the new drive sensation . . . Packard Ultramatic Drive!

ASK THE MAN WHO OWNS ONE







Personals

E. M. Slonaker, district sales manager for the Willard Storage Battery Company in Chicago, has been named to direct the company's Related Products Division. In his new capacity, Mr. Slonaker will be responsible for the development and sale of Willard dry batteries, battery service equipment, cables and cable accessories

George Fisher has been appointed as vice-president in charge of production for Keller Motors. Huntsville, Alabama. Mr. Fisher was previously associated with Studebaker for forty-five years in various managerial production capacities.

F. H. Boor has recently announced the opening of a gear engineering office in Lafayette, Indiana. Mr. Boor was chief engineer of the Fairfield Manufacturing Co. of Lafayette for more than twenty years.

Fred S. Ehrman, general sales manager of Bowser, Inc., since 1944, has been elected to the newly created post of vice-president and director of sales. Mr. Ehrman has been associated with Bowser, Inc., since 1925, and has served successively in experimental engineering, sales engineering and divisional sales work.

N. M. Jones, for sixteen years a member of the sales staff of the Macmillan Petroleum Corporation, has been appointed as Manager of the Lubrication Division of that







See your jobber LITTELFUSE Incorporated

4785 N. RAVENSWOOD AVE CHICAGO 40 U.S.A

YOUR MOTOR DOES THE WORK! Guaranteed 2 years, and to pump only cool, clean air. Pumps up to 105 lbs. into tire-90 lbs. quickly. Overa Millien Satisfied Users! **Used by Armies of Six Nations!**

Write NOW FOR "NO RISK" TRIAL ORDER PLAN! G. H. MEISER & CO.

327 EAST MARQUETTE RD., CHICAGO 37, ILLINO



SERVICE SPRING COMPANY INDIANAPOLIS 6, INDIANA

ALLOY



If they're HARD TO GET We've Got 'em!

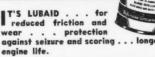
To Fit Every Car in America

Write for Catalog TSUNGANI PISTON CO.

625 East 11th St., Tacoma, Wash.



BREAKING IN NEW AND REBUILT MOTORS



LUBAID CO., Milwaukee 1, Wis

95

MOT

The BIG NAME in Automotive Service Equipment gives you RUGGED DEPENDABILITY . LONG LIFE . MAXIMUM EFFICIENCY because 95 years of successful engineering, designing and precision manufacturing assures the "know-how" to produce the best in equipment.

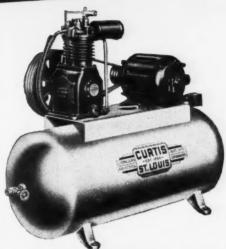
CURTIS AIR COMPRESSORS

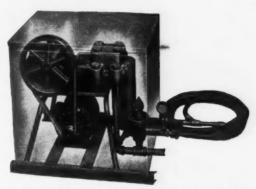
- Timken Bearing Equipped
- Self-oiling Controlled Lubrication
- Positive Unloaded Start
- Automatic Electric Welded Tank



CURTIS AUTO LIFTS

- Full Hydraulic Oil Locked
- Safe at any Level
- Self-leveling Platform
- Complete Accessibility





CURTIS HYDRAULIC CAR WASHERS

- Duplex-Double Acting
- Self-oiling Pump
 Brass-lined Cylinders

Check coupon for items in which you are interested and mail today.

CURTIS PNEUMATIC MACHINERY DIVISION

of Curtis Manufacturing Company

1946 Kienlen Ave.

St. Louis 20, Missouri

Name.....

a

Nis.

95 Years of Precision Manufacturing

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Company

1 am interested only in items checked below.

- Auto Lifts
- Car Washers

1946 Kienlen Ave., St. Louis 20, Mo.

- Street.....
- Firm.....

A49-3

Right Combination

United Motors Lines give you the right combination to open the door on a bigger, more profitable service business.

You get a steady, growing market . . . because these lines are original equipment on America's leading cars.

You get complete coverage...parts for old models and new.

You get latest service information-practical and up-to-theminute. And it's prepared the way you like it

for quick, easy reference.

On top of all this, United Motors provides you with tailored sales and merchandising programs, backed up by consistent national advertising. There's plenty of support to help build your business.

Find out what this "right combination" means to you. Talk over these United Motors Lines with

your local United Motors distributor today ... or write directly to us.

UNITED MOTORS SERVICE

Division of General Motors Corporation



General Motors Building, Detroit 2, Michiga

DELCO Batteries **AC Fuel Pumps, Gauges** and Speedometers **DELCO** Auto Radios **SAGINAW Jacks** MORAINE Engine Bearings DUREX Gasoline Filters

DELCO Radio Parts HYATT Roller Bearings DELCO Home Radios and Television **INLITE Brake Lining**

HARRISON Heaters DELCO Shock Absorbers NEW DEPARTURE Ball Bearings GUIDE Lamps

DELCO-REMY Starting, **Lighting and Ignition** KLAXON Horns **HARRISON Radiators ROCHESTER Carburetors HARRISON Thermostats DELCO Hydraulic Brakes**

10 WAYS TO BUILD GLASS REPLACEMENT BUSINESS

The surest way to become known as "the best shop in the business" is to build customer satisfaction. That's why all ten steps in good glass replacement are so important.

Look them over. Whether you do glass replacement work in your shop or send it out, give your customers all ten services whenever they say, "Put in new glass".

Furnishing top-quality glass is one of the points.

To be sure of a top-quality product, insist on L·O·F Hi-Test Safety *Plate* Glass. It is made with two panes of L·O·F Plate Glass, ground and polished for maximum freedom from distortion and laminated with a clear, tough plastic.

Be sure the stenciled identification "L·O·F Hi-Test Safety Plate" is clearly visible after glass replacement. It tells your customers that they have better glass for safer seeing. Libbey·Owens·Ford Glass Company, 6069 Nicholas Building, Toledo 3, Ohio.

THESE 10 SERVICES ASSURE A GOOD GLASS REPLACEMENT JOB

- In taking out out glass, care is taken not to mar or damage any fittings, upholstery, paint or mechanical parts.
- 2. If the cause of the breakage is unknown, workmen try to find it.
- If rust or some other obstruction in the frame or channel has strained the glass, the cause of the strain is removed.
- 4. Libbey Owens Ford Hi-Test Safety Glass is installed.
- In cutting the new glass to fit exactly, care is taken not to chip the edges.
- Edges that rest in the frame are "seamed" to reduce the chances of cracking from strain.
- *7. Edges that are exposed are rounded off smoothly to avoid cutting the channel strips or hands.
 - 8. Weather stripping or channel tape that has gone bad is replaced.
 - All the door and window lift mechanisms are checked to make sure that they work easily, don't rattle and won't strain the glass.
 - The new glass is installed in the car just as it was at the factory, watertight all around.



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ne, 1949

Time and skill are essential ingredients in building a reputation for good glass jobs. Here the edges are being carefully smoothed to avoid cutting channel strips or hands.



a Great Name in GLASS

The new DESOTO

gives the public what it wants. Modern design...with more room and comfort. No-shift driving. Extra value. No wonder demand is at an all-time high!



• Introduced early this year . . . and a tremendous success from the very start!

The new De Soto indeed gives the public what it wants. Beautiful styling, without being bulky or "modernistic." More head-and-hat room . . . more legroom . . . more

trunk room. Yet without increase in overall length or width. Greater glass area all around combines with broad chair-high seats to give more real visibility. The smoothest De Soto ride ever. And Tip-Toe Hydraulic Shift with Fluid Drive that lets you drive without shifting.

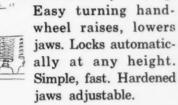
PROFIT BULLETIN



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under fenders or manifolds. Only 8" long.



K-D 115 Universal Ignition
Point Tool...aligns points fast.

Aligns both stationary
and movable breaker arm contact points right in the distributor.
Carefully machined, correctly tempered. Built for speed, accuracy, long service.



30 Socket Screw Key Set...

11 hex keys, sizes .050" to
11 hex keys, sizes .050" to
3%", in rust-proofed metal
kit, plus extension handle to
use on short end when long
end used to turn screw. Boltcap-wrench size chart
stamped in container. Keys
accurately forged.

removes, installs all makes, types, sizes of piston rings up to 4" diameter. Saves fingers, doesn't twist or stretch rings. Handy pocket size, strongly built. A hustler for your toolbox.



2

245 Bar-type Valve Spring Lifter for replacing valve assemblies in Ford motors . . . FAST. NOT for removing. Strong, double life tool of chrome vanadium steel. 30" long. Jaws alike at each end.



110 Contact Point Wrench—removes, installs stationary points in Autolite-type distributor.

1. End wrench loosens lock nut. 2. Spin out old point. 3. Socket holds new point. 4. Spin it in.

5. Measure clearances .015" to .040".

LANCASTER PA



It's the old, oft told "better mouse-trap" story brought up-to-date. The better and more modern equipment you have in your shop, the more car owners will drive in through your door.

Modern equipment not only brings them in . . . it gives you the means of handling more business without enlarging your space. It turns the work out quicker. It means more profit.

Your initial outlay will be small. On Commercial Credit's Automotive Equipment Plan, you can install what you need . . . pay for it as it earns. Ask your jobber about it.

THE BEST EQUIPPED SHOP
GETS THE PROFITABLE BUSINESS
BUY... AND FINANCE...
THROUGH YOUR JOBBER
ONE CONTRACT... ONE COST
INSURANCE INCLUDED



If you don't know about AEP . . ask your jobber.

COMMERCIAL CREDIT CORPORATION

A Subsidiary of

Commercial Credit Company, Baltimore . Capital and Surplus \$95,000,000

MORE THAN 300 OFFICES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA



WATCH HERBRAND'S "TOOL-OF-THE-MONTH"

Men who know the value of having the latest and best in tools are watching what is being displayed on Herbrand's "Tool-of-the-Month" counter display. Each month a distinctive new Herbrand tool designed to make work easier and faster appears on the board.

First in the series is the brand new Herbrand J-9 Speedratchet that's meeting excited acceptance by servicemen everywhere. It works four ways . . . as a palm grip T-handle . . . minimum clearance speeder . . . ratchet and extension . . . counterbalanced spinner . . . combination ratchet T handle with new palm grip. See this first Tool-of-the-Month at your tool distributor today, or write us for complete details.

HERBRAND

DIVISION

HE BINGHAM-HERBRAND CORPORATION • FREMONT, OHIO

Every month...see the "TOOL-OF-THE-MONTH" at your HERBRAND tool distributor



ne, 1949

GASOLINE SURVEY SHOWS*

Sunoco Dynafuel used by more Automotive Engineers than all other gasolines combined

*IMPARTIAL SURVEY among 513 foremost automotive engineers in the Detroit area shows more of them use SUNOCO DYNAFUEL in their own cars than all other gasolines combined. Dynafuel was preferred 4 to 1 over the second choice gasoline.

FOR BEST RESULTS don't dilute SUNOCO DYNAFUEL with other gasolines. Use it full strength. Wait until your tank is nearly empty, then fill up with Dynafuel. You'll get high-test performance without paying the premium price.

SUNDCO DYNAFUEL

HIGH TEST - YES! LY
PREMIUM PRICED - NO!

GASOLINE C

GASOLINE B 12%

GASOLINE E 4% GASOLINE D
5%

OTHER BRANDS 16%

55% prefer Sunoco Dynafuel

GRIZZLY

Saftibond

in more hands every day

Yes—every day more brake service men are profiting from Grizzly's pioneering in bonded brake lining! In 1947 Grizzly stepped out ahead of the field in development of bonding equipment and techniques, as well as with Saftibond—the lining with the non-deteriorating bonding agent already applied.

Today—thanks to Saftibond's superior quality and to the careful, capable service rendered by Grizzly Distributors like Edward H. Praefke, Praefke Auto Electric and Battery Company of Milwaukee, Grizzly Dealers are giving better service than ever

-are making greater profits.

Remember—there are hundreds of Grizzly Distributors like Mr. Praefke that you can depend on—that can give you the latest word on bonding. Call yours today!



Sonding department in E. H. Preefix Company, Note compact, well equipped set-up for Softhonding shees for those exchange pervice

GRIZZLY GRAKE LINING

FREE BONDING CATALOG

GRIZZLY MANUFACTURENC COMPANY PAULDING, ONIO

equipment, methods and materials for bonding

COMPAI

ADDRES

June, 1949

TODAY-more than ever



A Truly Complete Line for Every Automotive Service Need

Today, more than ever before, Ausco stands for PROGRESS in the field of automotive jacks. From Ausco's multi-million jack experience come the skill necessary for Jack-Building Progress. In Ausco's modern plants are up-to-date facilities needed for manufacturing jacks of highest design and quality... at the right price. From Ausco's skilled jack engineers comes relentless experimentation, basic to jacks that embody the latest advancements.

NEW SAF-LIFT* BUMPER JACK!

Its daring design makes it the *truly safer* bumper jack! Here's the jack that takes the "huff-and-puff" out of tire-changing! The practical high position of the handle eliminates awkward stooping or bending... there's no cranking or pumping... **Saf-Lift** lifts any car with a minimum of effort. Exclusive bipod construction assures a steady, firm, SAFE foundation.

Ask your friendly Ausco Jobber to show you this advanced **Saf-Lift** Bumper Jack, as well as the complete Ausco Line for '49. Or write us for catalog giving complete specifications on **Saf-Lift** and all Ausco Jacks. Address Dept. MA-6.

*Patent Pending

AUTO SPECIALTIES MFG. CO. St. Joseph, Benton Harbor,

and Hartford, Michigan; Windsor, Ontario, Canada

Extra-low load rest position with ample lifting range for all late model low-slung passenger cars.

The Jack

that puts

SAFETY FIRST!

> Folds up in a jiffy, neat as an umbrella! Fits into any trunk compartment.

Copyright 1949 by Auto Specialties Mfg. Co.



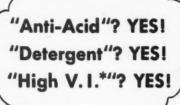
MOTOR AGE, June, 1949

UNSURPASSED

TRIPLE-

Flows Freely— Protects Fully— Saves Money!





SOCONY VACUUM OIL COMPANY INC.

ACTION



Last Word in
Engine Protection
for New Car
Customers!



● Sell NEW Mobiloil and you offer customers not just one but all three modern oil qualities . . . unsurpassed triple-action protection for even the newest automotive engines.

Sell NEW Mobiloil and you build prestige for all your products and services . . . greater customer-confidence in your entire set-up.

Call your Mobilgas-Mobiloil Representative now! Order NEW Mobiloil!

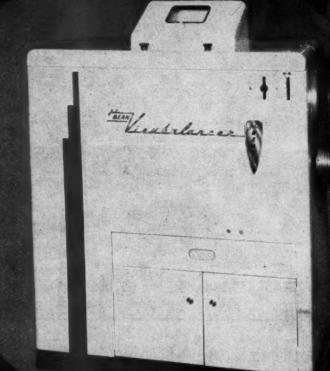
SOCONY-VACUUM OIL COMPANY, INC., and Affiliates:
MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

High Viscosity Index means high resistance to change in body under extremes of heat and cold.

More than Ever - it Pays to Sell the

World's Best Seller

VISUBALANCER* THE NEW John BEAN



COMPANION TO THE VISUALINER*

BALANCING WITH BEAM-OF-LIGHT SPEED AND ACCURACY

Again it's done with mirrors (and beams of light) . . . but there's no trick to wheel balancing with the new John Bean Visubalancer. Tells you exactly how much weight to use and exactly where to place it in a matter of minutes. With guesswork eliminated, you balance wheels faster, more accurately . . . and much more profitably. The Visubalancer is rugged and dependable—and a handsome addition to your shop.

Motorists are looking for Visualiner service now—they will be looking for Visubalancer service soon.

JOHN BEAN DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION

LANSING 4, MICHIGAN



* TRADEMARK

WHEEL ALIGNERS AND CORRECTION TOOLS WHEEL BALANCERS AND BALANCING TOOLS . WEIGHTS . CAR WASHERS . HEADLIGHT TESTERS

BIGGEST PROFIT-MAKING EQUIPMENT OF ALL DOESN'T COST YOU A CENT!

Your Customers Buy it for You!

HERE'S WHAT "BEAR" OPERATORS SAY:

you don't have to take our word for it

BUD KOEPPEN, BUTLER, PA. "I owe my success to 'Bear' Equipment—I refer to my home as, 'the house that Bear built'."

IVEY'S AUTOMOTIVE SERVICE, ATLANTA, GA. "The 'Bear' Alinement Division of my shop accounts for 75% of my gross business."

C. O. DUFFIELD MOTOR COMPANY, FINDLAY, OHIO "No other department of our service shop compares favorably with 'Bear' Equipment as a money-maker for the investment required."

WEBER BROS., SKOKIE, ILL."Business just comes in . . . and it keeps 7 'Bear' Front-End Men busy."

J. L. HORNING CO., KENT, OHIO "Our customer labor sales increased from a profit of 33% to 54% after installing 'Bear' Equipment."



"TOP Profit-Makers for Repair Shops—No Shop can afford to be without them!" Say Thousands of Shop Owners Coast to Coast!

350 MILLION DOLLARS A YEAR IS BIG BUSINESS! That's the kind of business America's service shops are doing on ALINEMENT AND BALANCING SERVICE today!

MORE OF THIS ALINEMENT AND BALANC-ING BUSINESS is being done on "Bear"

Equipment than any other make! Operator preference for "Bear" is 2-1 to 50-1 over any other make. Get all the facts from your "Bear" Jobber and it's easy to see why "Bear" Operators say,"The biggest profit making equipment of all doesn't cost you a cent!"

Profit-making "Bear" Equipment like the new "Bear" 115-88, and the popular Dy-Namic Wheel Balancer pay for themselves while earning a BIG DAILY PROFIT besides. They, also, are second-to-none as BUSINESS BUILD-ERS to feed new business to every other department of your shop.

the "BEAR" 115-88 Service and No. 800 Merchandiser

With "Bear" you get everything! You get the INDISPENSABLE advantage of

campaigns. See your "Bear" Jobber today...or write for copy of the NEW "BEAR"

CATALOG. But do it today! "Bear" Mfg. Co., Dept. M-1, Rock Island, Illinois.

FULLER ALINEMENT SERVICE, MEMPHIS, TENN. "We are constantly increasing our personnel and facilities to take care of the ever-increasing demand for 'Bear' Alinement Service."

CHUCK'S BRAKE AND WHEEL SERVICE, SANTA ROSA, CALIF. "The backbone of my business is the high volume of profitable jobs turned out on 'Bear' Equipment every day."

BILL ANDERSON'S SPRING SERVICE, INDIAN-APOLIS, IND. "Service sales have increased from \$300 per week to approximately \$1,000 per day in the new Coliseum of Service."



"Bear" to CASH-IN on "Bear's" National Advertising Program in the POSTI You can become the recognized Safety Leader and profit by BIG, INCREASED





Wheel Alinement and Dy-Namic Balancing . . . Headlight Testers . . . Brake Testers . . . Frame, Wheel and Axle Straightening.

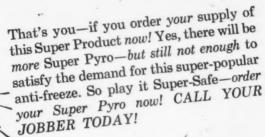


uper Product!

Compare Super Pyro with any other anti-freeze in its price range!

- 1. The anti-freeze protection of Super Pyro is $33\frac{1}{3}\%$ more effective than that of most other types!
- 2. Super Pyro protects not just one or two, but all 7 metals in the cooling
- system of a car's engine!
- 3. Super Pyro-due to an exclusive U.S. I. ingredient—is longer-lasting!
 - 4. Super Pyro has a new freedom from odor!

r-Safe





rPower



This Super Product deserves a super promotion . . . and it's all set. Super posters will sell Super Pyro to over 41,300,000 people. Super color ads in Look, Collier's and the Saturday Evening Post will sell Super Pyro to over 130,446,000 readers! Super newspaper ads every week will sell Super Pyro 149,908,712 times! That's Super Power! And that's what's going to send people right into your station for Super-Safe Super Pyro!

The longer-lasting anti-freeze!



U. S. INDUSTRIAL CHEMICALS, INC.

you make FULL PROFIT wit

HEAD GASKETS

OIL PAN GASKET SETS



INDIVIDUALLY OR IN FULL SETS

When you install Fel-Pro Head Gaskets you can match original head gasket equipment or use your special favorite, be it black, steel or copper. They are also available in Valve Grinding Sets and Full Gasket Sets. They are precision made to highest specifications. You get original equipment precision and quality. That means your work is sure to satisfy your customers and build your business. That's FULL profit! Fel-Pro has everything else you want in gaskets, Oil Pan Gasket Sets, Full Gasket Sets, Packings and Grease Retainers. Better start standardizing on Fel-Pro now.

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FELT PRODUCTS MFG. CO.
1521 Carroll Ave., Chicago 7, III.
Centlemen: Please send me,
without cost or obligation, copy
of the new "Quick-Reference"
Gasket Catalog.

use FEL-PRO!

My Name ______ State _____

STOP every "DRIP"

and keep him stopped

HPO 70

Real help for busy men! New "Quick-Reference" Catalog lists all gaskets and sets for all popular cars and trucks. Tear out, mail coupon now, while you're thinking about it.

NEW "Quick-Reference" Gasket Catalog. Get Yours—FREE!

FULL GASKET SETS, PACKINGS, GREASE RETAINERS

FELT PRODUCTS MFG. CO., CHICAGO, ILL.

AN INFALLIBLE GUIDE IN BUYING AUTOMOTIVE CABLE:

BUY THE CABLE THAT IS THE STANDARD OF THE INDUSTRY!

Packard cable occupies a unique position in the world of cars and trucks and buses.

It is the standard wiring equipment in the automotive industry.

It is used as original equipment on more cars, trucks and buses than is any other make of cable.

In these facts is evidence of preference and proof of quality—the quality that alone is Packard's.

And in these facts, too, is an infallible guide to the selection of the best brand of cable to stock for all your rewiring requirements.



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1949



PACKARD ELECTRIC DIVISION
GENERAL MOTORS CORPORATION
WARREN, OHIO

FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING

MOTOR AGE, June, 1949

Strategically Located Plants Serve the Entire Nation with Automotive and Farm Implement Wheek, Hubs, Drums, Brakes and Power Brake Equipment!



French & Hecht Division, is a world famous source of wheel hubs, axles, parts for farm equipment.

> is a world famous source of brake equipment for passenger cars, trucks, buses.

> McGraw Avenue Plant, is a world famous source of hubs, drums, and hub-anddrum assemblies.

> is the chief source of car and truck wheels for eastern automotive assembly plants.

Military Avenue Plant makes component pressed steel parts for brakes and brake drums of superiority.

Lathan Power Brake Division leads in complete power brake equipment for truck-tractor-trailers.

is a world famous center of wheel production for cars, trucks, tractors, and buses.

supplies wheels, hub-anddrum assemblies, brakes, "Vacdraulic" power brake units to Canadian industry.

EACH of these great concentrates exclusively on its own particular phase of total production to assure you the utmost benefit from many years of specialized knowledge and experience. Together, these highly Plants form an interefficient related group unequalled in the manufacture of a complete line of wheels, hubs and drums, brakes and power brake equipment used the world over by automotive, implement and trailer coach inis recognized for the superiority of its products, the advantages of its plant locations, and the convenience of its world wide engineering and sales service. Haves "Know-How" always serves you best.

ASSURES PROVEN

ASSURES PROVEN PRODUCTS AT

HAYES WHEEL COMPANY

DETROIT 32, MICHIGAN

Wheels — Hub and Drum Assemblies — Brakes — "Vacdraulic" Brake Power Units — for Possenger Cars, Trucks, Buses — made by Kelsey-Hayes' 4 Michigan Plants and Windson-Canada Plant • "Magdraulic" Electric Brakes • "Lathan" Vacuum Power Brake Equipment for Tractor-Trailers — made by Kelsey-Hayes' South San Francisca-Lathan Plant • Wheels — Hubs — Axles — Parts for Farm Implements — made by Kelsey-Hayes' French & Hecht Plant at Davenport, Iowa-





YOU'LL LIKE THE SERVICE—We help make sure your undercoating operations are put on the most profitable basis. We help train your spray gun men in correct application methods, and your salesmen in business—getting sales techniques.

YOU'LL LIKE THE PRODUCT—With Fendix you get more coverage per drum because only a $\frac{1}{16}$ " coating of Fendix gives maximum rust pre-

vention and efficient sound deadening...Fendix sprays easily in solid particles without mist or fog—gives uniform, continuous coverage.

YOU'LL LIKE THE PROMOTION—We provide you with plenty of free sales helps to help build your undercoating business.

Write for complete details on the Fendix "Packaged Deal" today...Address Dept. 6.

Sells as fast and easy as it sprays.....

THE DAVISON CHEMICAL CORPORATION

BALTIMORE-3, MD.





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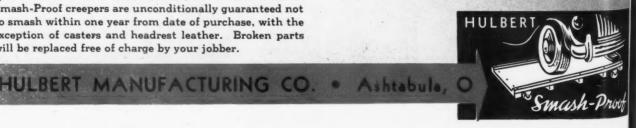
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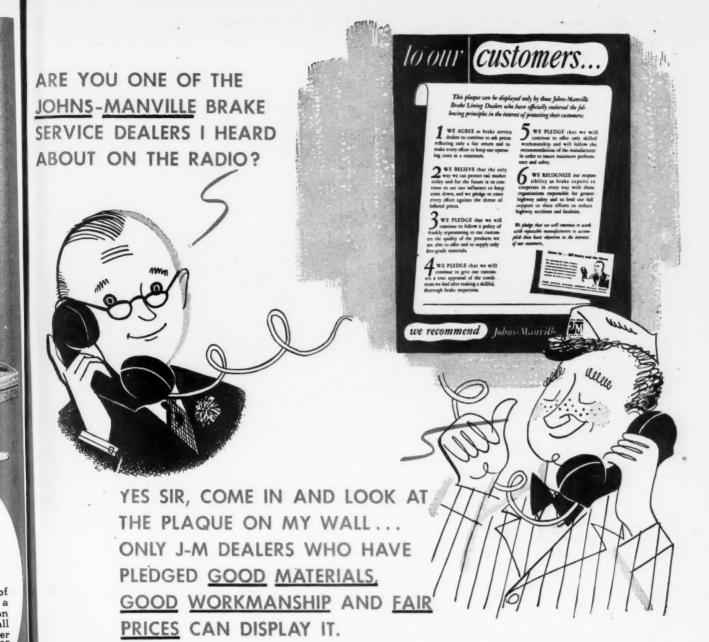
smash a Hulbert Smash-Proof. Special, plywood construction, one-piece backboard with upholstered head rest in the right spot for comfort on the job. Shims between cross pieces "undersling" the backboard . . . give 1/4 inch more working space. Special, high grade Smash-Proof Creeper casters roll when you want to roll and stay put while you work . . . a rugged brake if you want it, at small extra cost. That's the Hulbert Smash-Proof Creeper . . . And that's why Hulbert can guarantee it fully. Just look at that quarantee.

Guaranteed The Models No. 18, No. 18DD and No. 21 Smash-Proof creepers are unconditionally guaranteed not to smash within one year from date of purchase, with the exception of casters and headrest leather. Broken parts will be replaced free of charge by your jobber.

Smash-Proof Dippsy-Doodle Caster with casehardened wheel of small diameter . . . Rolls easier and more freely on uneven floors. Roll-over capacity of an 8 inch wheel, the Dippsy-Doodle Caster puts the top of your Brake-Type Smash-Proof only 2 1/4 inches from the floor.



И0.



Are you prepared to give this answer to your customers and prospects?

Millions of motorists are being told about the sound business principles endorsed by Johns-Manville dealers-broadcast over 371 stations of the Mutual Network during "Bill Henry and the News."

These motorists are urged-coast-tocoast-to look for the Johns-Manville dealer who displays this Plaque . . . and it is displayed only by Johns-Manville dealers.

The plaque is part of a complete packaged public relations and merchandising plan ... with tried and proved business building aids . . . exclusively for Johns-Manville dealers.

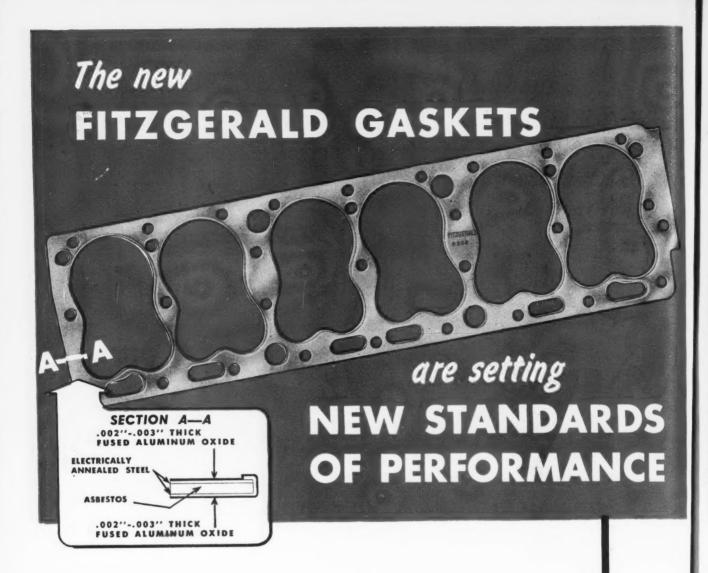
Get full details of this plan from your J-M distributor...phone him today...or write Johns-Manville, Box 290, N.Y. 16, N.Y.

Johns-Manville

BRAKE LININGS BRAKE BLOCKS **CLUTCH FACINGS**

Asbestos RICTION MATERIALS

1/4



Designed to match the requirements and performance of the newest high compression automotive engines, Fitzgerald Metallic Aluminum-Fused-Oxide Steel Asbestos Gaskets* withstand highest compression and heat where other gaskets fail. Ideal for low compression motors, too.

Steel, specially tempered for compressibility and resiliency, provides the strength. Fused aluminum oxide gives the necessary resistance to rust and corrosion. Fitzgerald's 43 years experience as craftsmen of better gaskets provides the know-how. The Fitzgerald Manufacturing Company, Torrington, Connecticut.

There's a Fitzgerald Gasket for every engine

GREASE RETAINERS

CORK GASKETS

FITZ-Rite* Treated Fiber Gaskets for oil, gasoline and water connections

Complete sets for motor rebuilders

*T. M. Reg. U. S. Pat. Off.





TESTED AND PROVEN By MILLIONS OF CAR OWNERS

THE National LINE Of Quality Automotive Parts

DRIVE SHAFT BUSHING & SEAL ASSEMBLIES

Pat. No. 2,403,520

Saves Buying New Drive Shaft. Install without tearing down differential. For ALL Chev. Cars. & Pick-Ups, '30-'48; Pon-tiac, '33-'36; Most GMC



DRIVE SHAFT HOUSING REPAIR UNIT K-400

Pat. No. 2,405,541

Saves Buying New Drive Shaft Housing. Repairs worn-drive shaft housing. Prevents damage to drive shaft, "U" joint, etc. caused by wear. For Chev. Cars & Pick-Ups; Most GMC Pick-Ups.

For QUICK, LOW-COST Repairs

Here is the fast selling, nationally advertised line with liberal profits for everyone in the trade. You can sell the National Line of Quality Automotive Parts with confidence because they have been tested and proven by millions of car and truck owners. Unique features of National Parts and Assemblies prevent costly major repairs. Your customers' cars can be serviced faster because National Parts are easy to



"UNIVERSAL" TRANSMISSION CASE BALL SEAT

Saves Cost of a New Transmission Case Assem-bly. Keeps ball housing in line with drive shaft housing. For Chev. Mas-ter '29-'48 Cars; Pontiac, '33-'36; Chev. '29-'48 1/₂ & 34 Ton Pick-Ups; Most GMC Pick-Ups.



UNIVERSAL JOINT BALL HOUSING KITS

Saves Buying a New Drive Shaft Housing. Repairs Worn Drive Shaft Housing. Stops excessive wear and vibration between drive shaft housing, ball housing and transmission case. For Most Chev. Cars & Trucks, '29-'48; Most G M C Pick-Ups; Pont., '33-'36.



* Finest Materials

* Precision Made * Rigidly Inspected

The National Line of Quality Automotive Parts are the products of sound engineering and precision manufacturing. They are rigidly inspected and guaranteed to be of finest quality materials and workmanship. The QUALITY of the National Line assures long-life repairs at low owner cost.

Sold Nationally by Leading Automotive Wholesalers. Write or wire for full information.



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install.

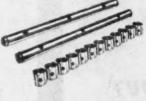
This trade-mark identifies all products in the National Line of Quality
Automotive Parts.

"IT'S BETTER IF IT'S MADE BY NATIONAL"



CARBURETOR NEEDLES & SEATS

HEXAGON Needle Inreases Efficiency. A quality set, where ac-curacy and perform-ance are big factors in complete motor tune-ups. For Most Cars and Trucks.



ROCKER ARM SHAFTS & BUSHINGS KITS

Finest Materials, Precision Ground. Rigidly Inspected. Engineered for speed and on-durance... hard usage and long wear. Longer life assured by most improved method of tempering. For Chev. Cars & Trucks.

CLIP
and
MAIL

Please Send Me Complete Information About the National Line.

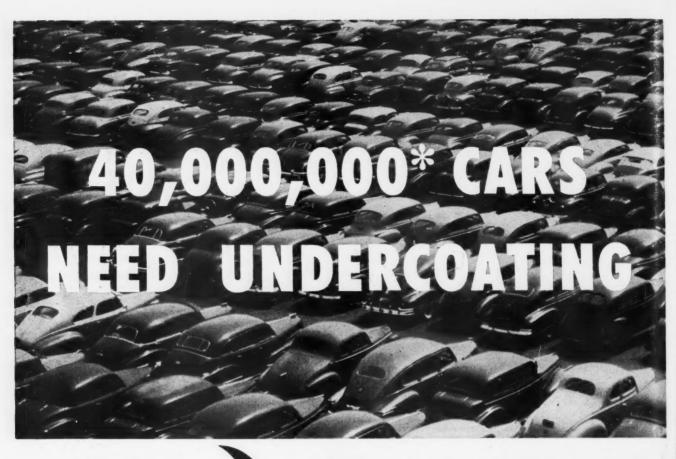
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NATIONAL MACHINE WORKS, INC.

AUTOMOTIVE PARTS MANUFACTURERS

P. O. BOX 4305

OKLAHOMA CITY 9, OKLA.



PROTECTS
AGAINST RUST

REDUCES VIBRATION

SILENCES SQUEAKS

A. C. Marie S.

SEALS OUT

MUFFLES

***Estimated**

NOW...Get in this REAL Profit Field with superior

LION ETETEGE

Under-Car Sealer and Silencer

Now is the time to start selling underbody coating—for extra profits. An estimated 40 million cars and trucks need underbody coating; so get your share of this tremendous new profit field now.

You'll find the *real* profit field exists for Lion Nokorode, because its quality is uniformly superior . . . entirely produced from raw material to finished product by a single company—Lion— under U. S. Patent No. 2393774.

Yes, it pays to sell an underbody coating you can sell with *confidence*. And Nokorode's controlled quality and uniformity assures ease of application and customer satisfaction.

Find out about the *proven* way to *extra* profits with Lion Nokorode. Just call or write for details of Lion's complete, backed-by-advertising plan . . . the plan that can add many extra dollars to your profit picture *fast*.

LION OIL COMPANY

El Dorado, Arkansas



AYNE LIFTS BUILD PROFITS

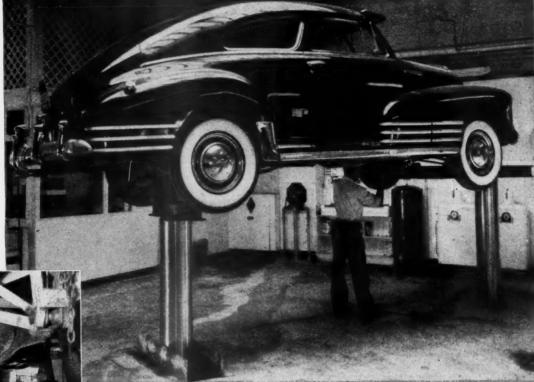


Illustration below shows special Jack design for Offset Differentials.

SINGLE OR MULTIPLE POST INSTALLATIONS

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e. 1949

Wayne Hoists are tailored to your own requirements. A Wayne representative will discuss your needs with you, and Wayne Hoist Engineers will recommend the right equipment for you. There's no obligation.

YOUR

WAYNE AUTOMOTIVE HOISTS are powerful, easily handled, and convenient. They permit complete access to all under parts of car. Special multiple post arrangements and superstructure designs developed to suit your requirements and accommodate longest trucks. You can increase your lube business, simplify tire and repair work with Wayne Hoists.





THE WAYNE PUMP COMPANY

504 Tecumseh Street, Fort Wayne 4, Indiana

Please send 🗌 Bulletin on Wayne 🗋 Two Post, 🗌 Single Post Hoists. 🗌 Send Salesman.

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NAME			
ADDRESS	*		
CITY		STATE	

COMPRESSORS . HOSE REELS . CAR WASHERS . DISPENSING PUMPS



"Extra Something" that only Champions have . . .

Bonded TO P

The most liberal performance warranty in piston ring history bonded by

EMPLOYERS MUTUALS

For years, Wausau Oil-Savr has been leading the piston ring performance parade — producing the results others have sought to copy — doing the things others claim. Now, Wausau Oil-Savr Custom-Made sets carry an amazing guarantee — they are BONDED by one of the largest liability insurance companies in the world. Here, for the liability insurance companies in the world. Here, for the first time in piston ring history, is an absolute unqualified assurance to you of the very finest piston ring performance under all conditions in every installation. . . Wausau Bonded Performance! Ask your jobber today, or write WAUSAU MOTOR PARTS CO., Wausau, Wisconsin

Only Wausau Oil-Savrs have SAFETY CENTER UNIT DESIGN*

- 1. CLEAN-Won't carbonize 2. SAFE-Won't break
- 3. LIVELY-Free running 4. LASTING-Extra mileage



NEW! THE "PRECISIONURL"



new and improved method of piston resizing so simple, yet accurate, that any mechanic can do a perfect job easily and quickly.

Cousau Oil-se

THE FREE RUNNING RINGS . . . WITH THE SAFETY CENTER UNITS

MOTORISTS WISE

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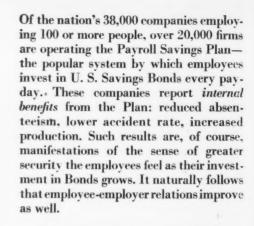
IMPROVE YOUR EMPLOYEE RELATIONS WITH THIS FIVE-STEP PROGRAM!





7,500,000 workers are regularly buying an individual average of \$20 of Savings Bonds per month. These people are gaining financial security—are putting more opportunity into their futures—because at maturity every \$3 invested will pay \$4.

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Obviously each company benefits in proportion to the percentage of its employees who participate in the Plan. Nation-wide experience indicates that 50% of the employees in your company can be persuaded to participate without high-pressure selling. Here are five steps which have proved to be the "magic formula" for putting over the Plan. They will get results for you:

- 1. See that a top management man sponsors the Plan.
- 2. Secure the help of your employee organizations in promoting it.
- 3. Adequately use posters and leaflets and run stories and editorials in company publications to inform employees of the Plan's benefits to them.
- 4. Make a person-to-person canvass, once a year, to sign up participants.

These first four steps should win you 40-60% participation. Normal employee turnover necessitates one more step:

5. Urge each new employee, at the time he is hired, to sign up.

Check up on the Payroll Savings Plan in your company. If fewer than half of your employees are participating, you have a lot to gain by following the five-step program outlined here. All the help you need is available from your State Director, U. S. Treasury Department, Savings Bonds Division. While it's on your mind, why not call him right now? Or write the Treasury Department, Washington 25, D. C.

The Treasury Department acknowledges with appreciation the publication of this message



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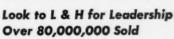


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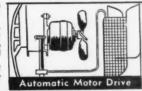
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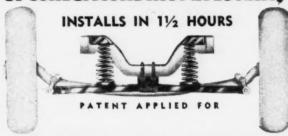


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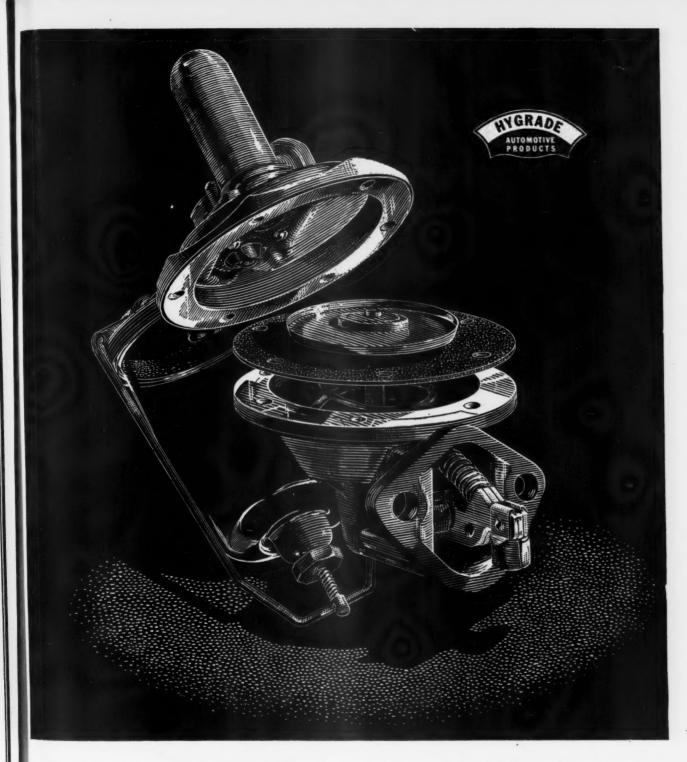
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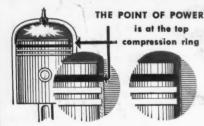


THE DAY OF THE STARTLING EXPERIMENT DAY NAVAL PERSONNEL, WITH MARTIN TECHNICIANS LOOKING ON, LOAD THE SHIP TO THE "GUNWAL"; THE AMAZING TOTAL OF 68,283 POUNDS IS RE



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